

SUNDARBANS

HEALTH WATCH

Series 1

How Healthy are the Children of Indian Sundarbans?

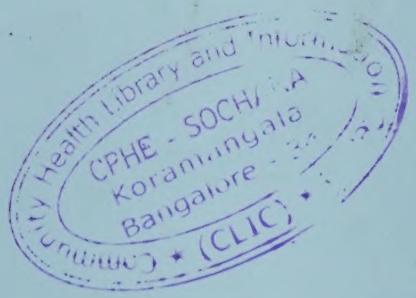
JUNE 2013



Future Health Systems
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Institute of Health Management Research



The Sundarbans Health Watch Report
Series: 1

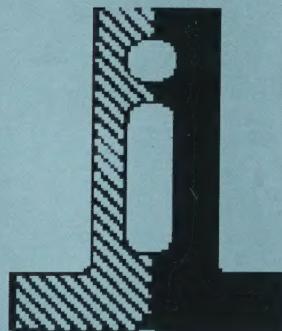
How Healthy are the Children of Indian Sundarbans?

Barun Kanjilal
Shibaji Bose
Nilanjan Patra
Debjani Barman
Upasona Ghosh
Arnab Mandal
Lalitha Swathi Vadrevu
Pratistha Sengupta

FHS-IIHMR
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Institute of Health Management Research (IIHMR)
Correspondence: Barun Kanjilal (barun@iihmr.org)

Head Office: IIHMR, 1 Prabhu Dayal Marg,
Sanganer Airport, Jaipur-302 029, India
Phone: +91 141 3924700, 2791431-32
Fax: +91 141 3924738
Email: iihmr@iihmr.org
<http://www.iihmr.org>

Project Office: IIHMR, Plot No. 22 & 23,
Nazirabad, P.O.- Ucchepota
(beside Heritage Group of Institutes),
P.S.- Sonarpur, Kolkata-700 150, India
Phone: +91 33 6415 8788

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Preface

Child health is extremely vulnerable in the Indian Sundarbans region due to its geographical accessibility problems, climatic challenges and economic vulnerability. It is evident that the routine services provided by the existing health care facilities are not only inadequate to reach out to every corner of the hard-to-reach areas with an affordable solution but also insufficient to meet the increasing demand for health care. To alleviate the problems, it is necessary to devise a separate long-term innovative plan to provide basic health care services more effectively and equitably.

The FHS-India team has been engaged in doing research on human health status in the Sundarbans from 2009 and came up with a report in 2010. In its ongoing endeavour, we planned for a series of publications in the name of Sundarbans Health Watch on different aspects of health in the region. The first of the series has the special focus on health of the children in the Sundarbans. This volume is based on a recent survey conducted in Patharpratima, one of the six most vulnerable blocks out of the nineteen administrative blocks of the Sundarbans. This study has made an attempt to find out the present condition of different aspects of child health, to identify the gaps in service delivery and possible ways out on the basis of scientific evidence.

This report will be useful for a wide audience, e.g., the NGOs working in this region, Sundarbans Development Board, Department of Health and Family Welfare, GoWB, the donor agencies, the regions with similar geo-climatic vulnerability in India and other developing countries, and international academia. We will also publish another report in local language for the narrower audience of the people and officials of the Sundarbans and local media.

We are part of Future Health Systems: Innovations for Equity, an international Research Programme Consortium (RPC) funded by DFID, UK. In India, Institute of Health Management Research is a partner of RPC and responsible for the research in the Indian Sundarbans region and trying to protect the interests of the poor and neglected people.

Abbreviations

ANC	Antenatal Care	IT	Information Technology
ANM	Auxiliary Nurse Midwife	IV	Intra-venous
ARI	Acute Respiratory Infection	KAP	Knowledge-Attitude-Practice
ASHA	Accredited Social Health Activist	MHC	Mobile Health Clinic
AWC	Angan Wadi Centre	MUAC	Mid-Upper Arm Circumference
AWW	Angan Wadi Worker	NGO	Non Governmental Organisation
BMI	Body Mass Index	NRHM	National Rural Health Mission
BMOH	Block Medical Officer of Health	OOP	Out-of-Pocket
BPHC	Block Primary Health Centre	OPD	Out-Patient Department
BPHN	Block Public Health Nurse	PHC	Primary Health Centre
BPL	Below Poverty Line	PNC	Post Natal Care
CDC	Community Delivery Centre	PPP	Public Private Partnership
DFID	Department for International Development	PPS	Probability Proportional to Size
DLHS	District Level Household and Facility Survey	PRA	Participatory Rural Appraisal
DoHFW	Department of Health and Family Welfare	PSU	Primary Sampling Unit
DPT	Diphtheria-Pertussis-Tetanus	RCH	Reproductive and Child Health
FGD	Focus Group Discussion	RI	Respiratory Infection
FHS	Future Health Systems	RMP	Rural Medical Practitioner
GID	Gastro Intestinal Disorder	SBA	Skilled Birth Attendant
GIS	Geographic Information System	SC	Sub Centre, Scheduled Caste
GoWB	Government of West Bengal	SDH	Sub Divisional Hospital
GP	Gram Pachayat (Elected Local Body)	SNU	Special Nutrition Unit
HDI	Human Development Index	SSDC	Sundarban Social Development Centre
ICDS	Integrated Child Development Services	ST	Scheduled Tribe
ICT	Information, Communication Technology	TBA	Traditional Birth Attendant
IFA	Iron and Folic Acid	TSRD	Tagore Society for Rural Development
IMNCI	Integrated Management of Neonatal and Childhood Illness	TT	Tetanus Toxoid
		VHND	Village Health and Nutrition Day
		Vit-A	Vitamin A
		WASH	Water, Sanitation and Hygiene

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The Indian Sundarbans, one of the world heritage sites, is a unique biosphere reserve of mangrove forests spread across more than a hundred islands. Most of the region is intersected by tidal rivers or estuaries and innumerable narrow tidal creeks, that make it a largely formidable and inhospitable terrain. ***The Sundarbans, famous for its iconic Royal Bengal Tiger, is also home to almost four-and-a-half million people living in abject poverty, chronic deprivation and acute suffering from climatic adversities.*** The geographical challenges are part of the lives of the Sundarbans' people who subsist primarily on agriculture, fishing and collecting forest products.



In 2010, FHS-IIHMR came up first with a report highlighting the precarious health condition of its people, its health system and a plan for a better future. The 2010 report identified six administrative blocks from a total of nineteen blocks of the Sundarbans as more vulnerable from both service delivery gap and physical inaccessibility lens. Among many other findings, the report evidenced that **children of Sundarbans are the most vulnerable to health shocks due to unacceptable levels of under-nutrition and high prevalence of common communicable diseases.** For example, the proportion of chronically malnourished children was 52 per cent which was more than both the state (45%) and the national averages (48%). One in three children in the Sundarbans was found to have suffered at least one episode of respiratory ailments in the last two weeks (before the survey) compared to only 13 per cent in West Bengal. Lying underneath the grimy stories about children's health, there remains a complex landscape of interlinked factors that determines child health and health system in the Sundarbans.

The present report, thus, focuses on one of these more vulnerable blocks, namely, Patharpratima as a representative block of the Sundarbans. The study Block is also an ideal mix of deltaic (completely river locked) and non-deltaic (connected with main land) topography. The present study attempts to examine the health status of the children 0 to 6 years of age, people's child health seeking processes and accessibility, availability, affordability and acceptability of the existing pluralistic health system of the Sundarbans. The study tries to explore the 'structural holes' in the service delivery of public health care system and the role of informal providers in filling the gaps. It also talks about the quality of care by the indispensable informal providers and frontline formal health workers and the NGO initiatives. The present research used an unique approach by preparing a GIS map covering all types of health care providers within Patharpratima Block to find out their current distribution pattern and hence the gaps therein.

To understand the root of the problem, the study takes a child health right approach and attempts to understand whether and to what extent the rights are protected, especially in climatically challenged areas



such as the Sundarbans. In a nutshell, this report generates research evidence on the barriers to service delivery and access of health care services for children and endeavours to find out ways to make the system more effective in the Sundarbans.

Key findings

Health status of children

- More than one-third of the children are chronically malnourished. Malnutrition is higher among older, poorer children and girl children aged 13-36 months. Children from the deltaic region are more nourished than those of the non-deltaic region. Children of malnourished mothers are more malnourished than the children of normal weight mothers. More than one-third of the mothers are also malnourished.
- Children of the Sundarbans are facing an extra burden of morbidity. About two-thirds of them suffered from at least one ailment in the last thirty days and more than five per cent were hospitalised within the last one year. It suggests that 0.3 million children will be ill in a month and 26,000 children will need hospitalisation in one year in the Sundarbans. Children mostly suffer from respiratory infection (fever, cough), gastrointestinal disorders (diarrhoea, watery stool) and skin problems (irritation, rash). Prevalence of respiratory infection or gastrointestinal disorders in the Sundarbans is much higher than the district or state average.
- The level of antenatal care (ANC) given to mothers is satisfactory but mothers' nutrition should also be given greater care. Fifty-five per cent of the children are born at home and only five per cent of these home deliveries were assisted by qualified medical professionals. There is an excellent record of immunisation, but neonatal care is very much neglected. A quarter of the children aged 0-12 months took birth and spent the first week of their lives without any medical supervision from any health worker. Timeliness of immunisation and immunisation of home-delivered children remains a cause of concern. Child feeding practice is another grey area. About sixty per cent of them did not receive breast-milk immediately after birth and there is also lack of exclusive breast-feeding for the first six months. There is huge demand for health care as almost all ailing children sought medical care. However, 85 per cent of the OPD treatment for ailing children is provided by the Rural Medical Practitioners (RMPs) of questionable quality.

Health care utilisation

- Hospitalisation rate of children is higher than that of adults. About three-fourths of all child hospitalisation were in public hospitals, reflecting absolute dominance of the government health system in IPD care.
- Dominance of public hospitals in IPD care does not mean good utilisation of local hospitals as almost two-thirds of the hospitalisations were outside the block.

- Although three-fourths of children aged 0-2 years are registered with *anganwadi* centres, utilisation of their services is very low. ICDS services are better in the deltaic region.
- The children aged 3-6 years are more likely to be registered at the local *anganwadi* centre; but what is much less likely (61%) is that they regularly attend the centre and receive supplementary nutritious food. Only eight per cent of them eat the meal at the centre.

Who provide health care and how much?

- The available public health care system is grossly inadequate to maintain child health. Though sub-centres are almost adequately available, public hospitals and front line workers are less available. SCs satisfactorily provide preventive care but curative care of the children needs to be improved.
- PHCs are not only less available, but many of them are running ineffectively with shortage of critical inputs. The lone BPHC is providing good care despite shortage of human resources, but it is very inadequate for the child health care needs.
- Given the failure of the public health care system to cater to child health care needs, a parallel market has cropped up to bridge the huge gap in the curative care market. Unqualified RMPs dominate this parallel market.
- As most of the children are treated by the RMPs and the quality of RMP's care is unregulated and often questionable, there is a potential threat to child health.
- There are many NGO initiatives but too little for child health. NGOs work on PPP model or are donor-driven. Innovative interventions being done by some of them need to be replicated.
- Unique geographical challenges also increase the barriers to access the less available public health care facilities and force people to go to informal providers.

Plan for healthy future of children

- A logical step forward would be to discuss and debate the options with all key stakeholders and finalize a road map with necessary modifications. The suggested solutions are guided by the proposition that, given their complex landscape and barriers, the Sundarbans require a multi pronged strategy to meet the health care need of children. In other words, it requires a series of initiatives engaging all types of service providers and about innovatively putting pieces of interventions together to create a big push and reach a sustainable and an equitable and effective delivery system.
- The system requires a child- focused lens in the existing public health programmes, especially in general OPD services. The public health system also needs to plan for neonatal care of home delivered children. Improvement in coverage of ICDS services, especially nutritional services is a must.





- There is a need for strategic shift in the provision of RCH care, especially in the context of the Sundarbans. The shift would require an assured continuum of quality health services to every child and his/ her mother at least during the thousand days window of opportunity.
- To reach the goal, effective partnership between the government, private sector and donor agencies is pre-requisite. Since RMPs and NGOs are the core non-state providers here, there is need to engage them deeper in the formal health system. Such partnership can be based on franchise models and initiated at least in the vulnerable blocks focusing on child health and would recognise the importance of contextual factors.
- Local innovations are the best for the solution of local problems. Hence, such innovations should be promoted.

Conclusion:

The study identifies a huge gap in the protection of child health rights in the Sundarbans, especially in the context of the thousand days window of opportunity for ensuring a healthy future of children. The key challenges to make the system more responsive to children's basic health needs are influenced by several factors working within the following five domains: Climate, Topography, Society, Livelihood and Formal health care structure.

It is important to note that the challenges across the domains are not independent; rather, they work together and produce a strong spiraling effect to resist the development process, especially in the context of health sector initiatives. The time has now come to acknowledge the uniqueness of the health care needs of this region and focus on them with special attention.

The report is a first of a series of efforts to guide knowledge translation to support action on the social determinants of child health and health equity.

The research results elaborated in the document seeks to help guide the application of knowledge for informing public health action to improve health equity, which remains the principle objective of FHS research.

Concurrent with research studies and publications, focused efforts would strive to draw knowledge from multiple sources, involve stakeholders and prioritize multisectoral engagement.

1. Background

1.1. Introduction: Rubina's story

Rubina (name changed) is a five year old girl living in the Patharpratima block of the Sundarbans. She was born to a poor Muslim family that migrated to the Sundarbans more than 100 years ago. Her father is a landless daily wage earner and her mother is a housewife. Rubina, the first child of her parents, has one younger brother and one sister. The family of seven – including Rubina's grandparents – lives in a kuccha (semi-permanent) house with two rooms. Their house was partially damaged in the cyclone Aila in 2009. Rubina's uncle, the only other wage earner of the family, died at the age of sixteen in a tiger attack when he went to the forest to collect honey.



Rubina's family represents the average human face of the Sundarbans.

Her parents married in their teen, the father having studied up to 10th standard and her mother up to the 6th standard. Rubina came within one year of their marriage when her mother delivered her birth at home with the help of a traditional birth attendant (TBA or dai). Her mother was a frail woman during the pregnancy, despite, having received injections (TT) and tablets (IFA) from local health centres. At birth, Rubina was a small baby and weighed only 1.7 kilograms. She was fed exclusively on her mother's breast milk for three months after when, as her mother remembers, the milk dried up and she had to put Rubina on a diet of solid and semi-solid foods. The child received some vaccinations in the first couple of months, but missed the subsequent doses. And despite her small size, no one ever took her to the local Anganwadi (ICDS) centre for food supplementation.

Rubina has been very weak since her birth – a chronically ill little girl. Whenever she falls ill, her father takes her to a local rural medical practitioner (RMP or unqualified village doctor). The primary health centre (PHC) – the only public health facility available within miles – is too far; a visit to this PHC would cost him almost three hours of journey time and three days' earnings to pay for the transportation and medicine. It is also a common knowledge that the lone doctor at the PHC is not always available. The RMP, on the other hand, is located within the village; he is always ready with some medicines for any disease and does not mind if he is paid later.

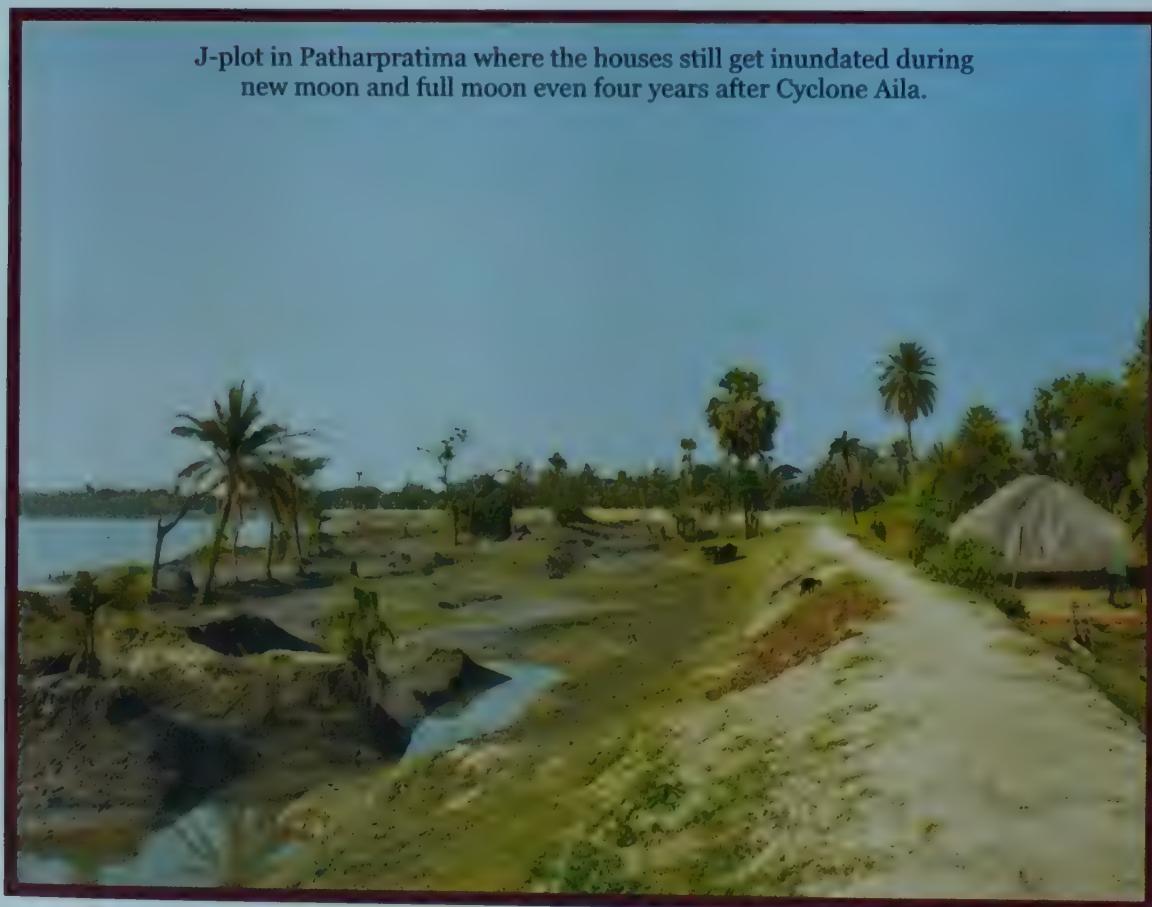
One ailment after the other does not allow Rubina to smile. At five, she is still a frail child. Their parents do not know why she is suffering so much. They do not have enough money to take her to a big hospital for treatment. Rubina feels too weak to play with the other children of her neighbourhood. She sits in front of her house with a sullen face and watches the others playing. When will she be able to join them?

1.2. Context



Rubina's story is hardly unique. Indeed, there are many such Rubinas' in the Sundarbans fighting with chronic malnutrition and recurrent episodes of ailments. Their stories, however, remain unsung, often obscured by the romantic vision of a region filled with natural beauty. In this report, we will describe many such stories, with the hope that they do not remain hidden among the deltaic islands that comprise much of the Sundarbans.

The precarious health situation of the people of the Sundarbans was first highlighted in a comprehensive study prepared and published in 2010 by Future Health Systems (FHS) – a research project implemented by Institute of Health Management Research (IIHMR)¹. The report (henceforth referred as 2010 FHS study) was the first attempt to comprehensively capture the poor conditions of the people's health in the islands based on a series of studies conducted in all blocks of the Sundarbans. Among all the findings from the studies, one, which stood out with glaring uniqueness, was the miserable status of children's health and a weak health care system that only perpetuates the poor conditions.



J-plot in Patharpratima where the houses still get inundated during new moon and full moon even four years after Cyclone Aila.

¹Institute of Health Management Research. 2012. Health care in the Sundarbans (India): Challenges and plan for a better future. Report prepared by Future Health Systems Research Programme. (<http://futurehealthsys.squarespace.com/publications/health-care-in-the-Sundarbans-india-challenges-and-plan-for.html>).

Lying underneath the grimy stories about children's health, is a complex landscape of interlinked factors. The Sundarbans delta in India – a cluster of more than 100 islands located in the extreme south of West Bengal (an eastern state) – is a unique eco-reserve of mangrove forests (Figure 1.1). The entire area is intersected by tidal rivers or estuaries flowing from north to south and by innumerable narrow tidal creeks cutting east to west, painting an assortment of beautiful but largely formidable and inhospitable terrains. The area outside the reserve forest (54 islands), home to about 4.5 million people spread over 19 administrative blocks, is the human face of the Sundarbans epitomizing abject poverty, deprivation, and acute struggle against geographical challenges.

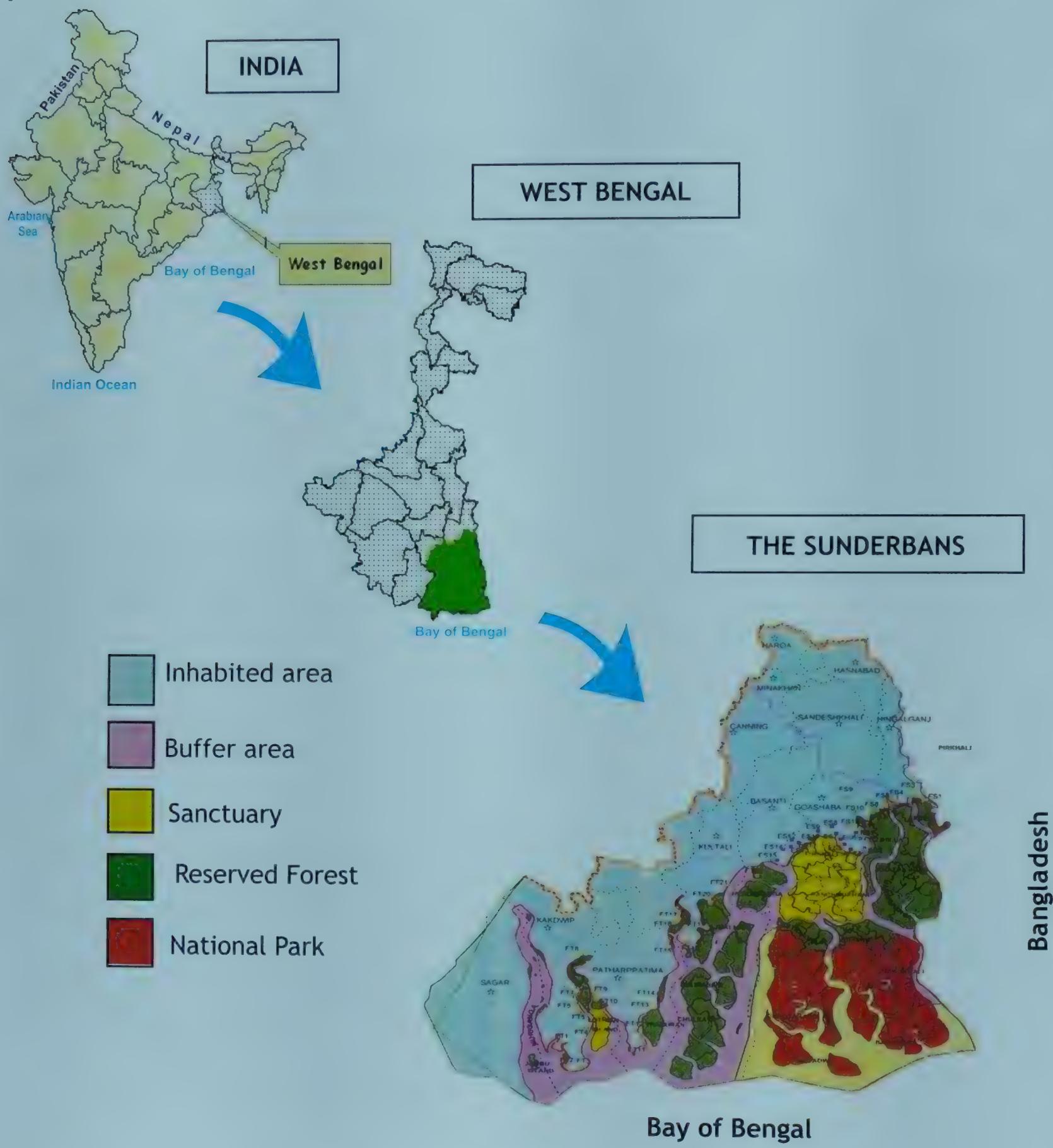
Geographic challenges are part of the life of the Sundarbans' population, who subsist primarily on agriculture, fishing and collecting forest products. The highly complex topography of the region coupled with poor road infrastructure, constrains the mobility of a large number of people. The situation is more adverse in the remote islands where people have to use multiple modes of transportation – boats, van rickshwas, and walking – to move from one island to another. As expected, the degree of difficulties rises manifold during monsoon season.

Added to geography, climate plays a rude villain to the people of the Sundarbans. First, many islands – especially those, which are closer to the forest area and the sea, are prone to yearly shocks of pre-monsoon cyclones that severely damage habitations. The cyclonic storms and floods breach the banks, inundate the localities, render people homeless, and make agricultural lands completely unusable for a few years. Second, the increasing height of sea-levels, due to global warming, has already led to the disappearance of a few islands within the region and threatens to guzzle up a large part of the Sundarbans in a few decades. The adversities have already given birth to a sizeable number of climatic refugees, who have lost homes due to sea level rise and resultant submergence of islands due to worldwide climate change (Mitra et. al. 2009, WWF 2010).

It is, however, important to note that the geographical and climatic challenges vary across the Sundarbans' blocks. People, who live in the 'remote' Sundarbans – the six blocks adjacent to the forest area or the Bay of Bengal – face much harsher conditions compared to those who live in the 'peripheries' (and closer to Kolkata city). As identified in the 2010 FHS study, out of nineteen, six blocks – Gosaba, Hingalganj, Patharpratima, Sandeskhali-2, Namkhana, and Kultali – were found least accessible and most vulnerable to climatic shocks. As expected, the fragility in health service delivery is more prominent in these blocks, which form the 'core' part of the Sundarbans.



Figure 1.1. : Location Map of the Indian Sundarban



Map not to scale

The geographic vulnerability of the Sundarbans makes it special not only with respect to the livelihood and survival of its people but also in terms of people's health status and the health care delivery system in the region. The 2010 FHS study, based on a cross-sectional survey of households across all blocks of the Sundarbans, depicts a shocking scenario on both accounts. The study produced a series of scientific evidence on the health status of the islanders, and concluded:

"A typical resident of the Sundarbans carries an extra load of ill health and health risks compared to others living within the same district. Poverty, coupled with sharp geo-climatic challenges, makes him / her especially vulnerable to health shocks caused by environmental and lifestyle related agents. As the FHS survey found, the islanders are doomed to struggle with both communicable and non communicable diseases often leading to complete disorder in priorities to tackle the problems. The children are the worst sufferers; most of them are chronically malnourished and, hence, perennially suffer from disproportionately higher burden of respiratory and gastro-enteric troubles. Women and the poor are especially vulnerable to the chronic and acute health conditions. In brief, with about 4 million people currently estimated to live in the region, this neglected population has become a major reservoir for a wide spectrum of health conditions that are not always well recognized by the existing formal health sector (IIHMR, 2010)."



The evidence also highlighted that children are the most vulnerable to health shocks due to unacceptable levels of under-nutrition and high prevalence of common communicable diseases. For example, the proportion of chronically malnourished children was 52 percent, which was more than both the state (45%) and the national average (48%). One in three children in the Sundarbans was found to have suffered at least one episode of respiratory ailments in the last two weeks (before the survey) compared to only 13 percent in West Bengal. **This is quite consistent with global evidence suggesting that children are most likely to experience adverse health caused by environmental factors** (Neira et al., 2008). Due to children's rapid growth and physiological and cognitive development, they are exposed to and more vulnerable to biological, chemical and physical environmental hazards compared to adults (Shea 2007).

The health service delivery system in the Sundarbans, against the above backdrop, is far from being in a socially optimal or desirable state. People often do not have many 'desirable' choices regarding health care. Publicly funded health care facilities are non-existent or non-functional in the most vulnerable areas due to staff shortage and weak infrastructure. The functional facilities are often physically inaccessible for a large section of population due to difficult-to-navigate terrain. Voluntary agencies (NGOs) only reach a small fraction of the population despite their best efforts. Consequently, the gaps are filled in by a huge



army of Rural Medical Practitioners (RMPs) – those who practice modern medicine without any formal training or authorisation – who act as the only resort in normal times as well as during climatic crisis. It is important to note that the dependence on RMPs is discernibly higher for child health care. For example, about three-quarters of children ailing from diarrhea or Acute Respiratory Infection (ARI) problems are treated by RMPs, as compared to about 60 percent of adult patients (IIHMR, 2010). In brief, the basic and curative health care – especially for children – in the Sundarbans is almost exclusively provided by the RMPs. This has potentially huge implication on children's health since the RMP services are of varying quality and the market is virtually unregulated.

In terms of the overall picture of the health service provision in the Sundarbans – what we refer to as the 'supply side' in this report – parallel structures exist where public, private and voluntary providers operate in

their respective convenient zones without effective linkage or regulation and leaving a large section of population under-served. The FHS 2010 study made it clear that the Sundarbans require specially planned service delivery models that would effectively integrate these providers and meet the health care needs with innovative interventions. The model should be based not only on a clear mapping of available local providers' network and the supply gaps but also on a deep understanding of the health care needs of the local residents – children in particular – during normal times and during climatic shocks, communities' adaptive capacity to climate and health crisis, and their interest and potential to take an active role in the change process.

1.3. Future Health Systems Research Project

Future Health Systems (FHS) is a research consortium working to improve access, affordability and quality of health services for the poor. FHS is a partnership of leading research institutes from across the globe working in a variety of contexts: in low-income countries (Bangladesh, Uganda), middle-income countries (China, India) and fragile states (Afghanistan), to build resilient health systems for the future. After a successful first five-year phase from 2006-2011, it has entered a new six-year phase of research (2011-16), funded mainly by the UK Department for International Development (DFID). In India, the FHS research is implemented by Institute of Health Management Research (IIHMR) with the primary focus on the health care delivery system in the Indian part of the Sundarbans.



The main focus of this research is to generate knowledge on the barriers to delivery and access of health care services for children and find out the ways by which they can be made more effective in the Sundarbans. It tries to understand the multidimensional nature of the crisis in health care access in the Sundarbans to plan effective service delivery mechanism. The generation of knowledge primarily relates to the what, where, and how of an effective service delivery system :

What: What types of intervention in child health care would be more effective? What are the priority areas with respect to child disease burden? What is the pathway by which the intervention would affect the existing system and help it cope with this burden, especially under climate shocks?

Where: Which areas (islands) are appropriate for intervention? In other words, where is the maximum unused service delivery space?

How: How the intervention, once designed, can be organized? How can communities' capabilities be unlocked to make it more effective and sustainable? How will it stimulate new innovations? How can research evidence influence these processes?

Considering the huge knowledge gap, any plan for improving the Sundarbans' primary health service delivery system depends heavily on a continuous stream of scientific evidence on the supply and demand side of its healthcare market. This, in turn, is pre-conditioned by the following four factors: (1) a knowledge-policy-action platform involving key actors in the Sundarbans' healthcare system which would facilitate generation and sharing of knowledge on people's need and existing responses; (2) a continuous feed of scientific evidence channeled through the platform to influence the policies and make the system focus on the Sundarbans' vulnerable and un-served areas; (3) an effective mechanism of capacity development of the local stakeholders to enable them translate evidence into policy and action; and (4) local-to-global knowledge assimilation to inform global efforts for breaking access-barriers for healthcare. The FHS research is expected to meet these preconditions and create a critical push on policy and actions for better health of the Sundarbans' children.



1.4. About the Sundarbans Health Watch Report

The central agenda of the FHS initiative is to communicate scientific evidence – generated through its research programme – to all people and organisations who have a stake in the development of the Sundarbans. For this purpose, a report on various aspects of the Sundarban's health care system – *The Sundarbans Health Watch Report* – will be published at regular intervals. The report will focus on the key issues and gaps in the health service delivery system, especially in the context of child health care in the Sundarbans. More importantly, it is an attempt to identify key priority areas for innovative interventions in child health care especially in relatively inaccessible islands of the Sundarbans.

This document is the first in the series of the Sundarbans Health Watch Reports. The report is based on a set of recent studies on the children's health status and the available health services for them in one representative block of the Sundarbans. A brief about the study designs is given below.

The study area: Patharpratima

The study was conducted in the Patharpratima block of South 24 Parganas district of the Sundarbans during April–May 2012 (henceforth referred to as the '2012 FHS Study').

Patharpratima was selected because: (1) the 2010 FHS study identified it as one of the six most vulnerable blocks (among all nineteen blocks in the Sundarbans) in terms of geographical challenges and repeated climatic shocks, and (2) it reflects the mix of deltaic (less accessible) and non-deltaic (more accessible) habitations and, therefore, may be considered as a representative block of the Sundarbans. The typical deltaic topography, geographical hurdles, and multi-ethnic composition of the population in this block make it appropriate to study the critical health care issues related to demand, supply, and institutional factors, which are typically associated with the remote islands of the Sundarbans.

Figure 1.2: Patharpratima Block



The location of Patharpratima is critical. It is located in the south-west part of the Sundarbans, bordered by the reserve forest on the east and the Bay of Bengal on the South. This location makes it extremely vulnerable to cyclonic storms. The maze of rivers, estuaries and creeks carry saline water inland from the Bay of Bengal. Herein, separated by rivers and creeks, live about 331,000 people spreading across fifteen Gram Panchayats² (GPs). Ten of these GPs are water-locked (deltaic)

²Gram Panchayats are local government units covering cluster of a few villages.

while the other five are non-deltaic (Figure 1.2). The child population (0-6 years) constitutes about 12 percent of the total (roughly 41,000).

People living in the block are generally of poor economic status. Scheduled castes, scheduled tribes, and the religious minorities – the traditionally marginalised groups – comprise almost forty percent of the population. According to a rural household survey conducted in 2005, a little over half of the households (51%) in the block are from Below Poverty Line (BPL) category³. The block ranks 8th among 13 blocks in the south Sundarbans in terms of Human Development Index (HDI)⁴. Similar to other Sundarbans blocks, where there is hardly any employment opportunities outside the primary sector, agriculture is the main occupation for most of the households in Patharpratima; about two-thirds of workers are associated with agriculture, either as cultivators or as agricultural labourers. Among land - holding households, more than three quarters (77%) hold less than two acres of land – usually low in fertility due to salinity in land and lack of freshwater⁵ – implying a low-return, subsistence agriculture. The scenario related to physical infrastructure is worse in comparison to most of the non-Sundarbans blocks in the same district. According to the 2001 Census, only seven out of one thousand households had access to electricity and there was only 0.23 km of surface road in one square km area⁶.



Ramganga, the block headquarter of Patharpratima is almost 100 km from Kolkata, the state capital, 55 km from the nearest sub-divisional town (Diamond Harbour) and 44 km from the nearest railway station. From Ramganga it takes around four hours to reach Kolkata by bus and about two hours to reach Diamond Harbour. However, from the G-Plot, the southernmost tip of the block, it takes about another three - four hours to reach Ramganga by boat. The travel duration can go up further due to non-availability of the link-up ferries. There are no state or national highways in the block. Thirty six different ferry services and only one bus route (from Ramganga to Kolkata) constitute the transportation system in the block.

As mentioned earlier, a large portion of the block is locked by rivers (deltaic) making it more vulnerable to climatic shocks such as floods and cyclones. The normal wind speed is up to six km/hour, but during cyclones the speed goes up to 160 km/ hour. Four to eight cyclones distress the area every year. Compared to the storms of the monsoon season, pre- and post-monsoon storms are more violent. Severe cyclonic storms over the Bay of Bengal have registered a 26 percent increase over the last 120 years, intensifying in the post-monsoon period possibly due to rising sea surface temperature⁷. It is also recorded that about 10

³Rural Household Survey, 2005. Department of Panchayet and Rural Development, Government of West Bengal.

⁴Government of West Bengal. 2009. District Human Development Report: South 24 Parganas, Development Planning Dept, Kolkata. (http://www.wbplan.gov.in/HumanDev/DHDR/24%20pgsSouth/s24prg_main.htm).

⁵Only 19% of cultivable land in the block are irrigated (District Human Development Report: South 24 Parganas, p-38)

⁶Census of India, 2001

⁷Centre for Science and Environment. 2012. Living with changing climate: Impact, vulnerability, adaptation challenges in Indian Sundarbans. CSE: New Delhi.

Singh OP. 2007a. Spatial variation of sea level trend along the Bangladesh coast, Mar Geol, Vol 25: 205-212.

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Snapshots of temporary (left) and concrete (below) embankments being breached.



Youngsters examine mudslide by river erosion.



per cent of the world's tropical cyclones occur in the Sundarbans⁸. In brief, Patharpratima is a representative block of the Sundarbans; its residents face chronic poverty, climatic challenges, geographical adversities, and struggle for survival. As such, it is similar to the other five vulnerable blocks of the core Sundarbans.

Key questions

Given this background, this Health Watch report attempts to address the following questions:

- What is the overall health status of the children (0-6 years) in the Sundarbans in terms of basic morbidity and nutritional indicators? What are the more severe ailments and their causes? What are the key issues that are associated with the current health status of children?
- How and where do people seek health care when a child falls sick? What factors explain their health-seeking behavior especially in the context of child health? What are the key issues related to demand side of child health care?
- Who provides health care to the children and how? How prepared and equipped are the local health care providers? How are they networked? What are the gaps? What types of innovations in the health delivery system might help improve the effectiveness of child health care?

Data and methods

This report is largely based on a set of primary data collected from the Patharpratima block of South 24 Parganas district of the Sundarbans during April-May, 2012. The primary dataset includes data on the demand as well as on the supply side of the health care delivery system. We carried out four parallel surveys in 30 randomly selected villages in the block:

- A household survey covering about 1200 households.
- An exit interview of 253 outpatients in selected government facilities and Rural Medical Practitioner (RMP) clinics.
- In-depth interviews with selected RMPs.
- In-depth interviews with facility-in-charge of government health and nutrition care facilities.

Each of the above was executed with a set of structured questionnaires.

The following approaches were undertaken to supplement the above surveys:

- Mapping of all health care providers (including formal and informal providers) using GIS mapping process.

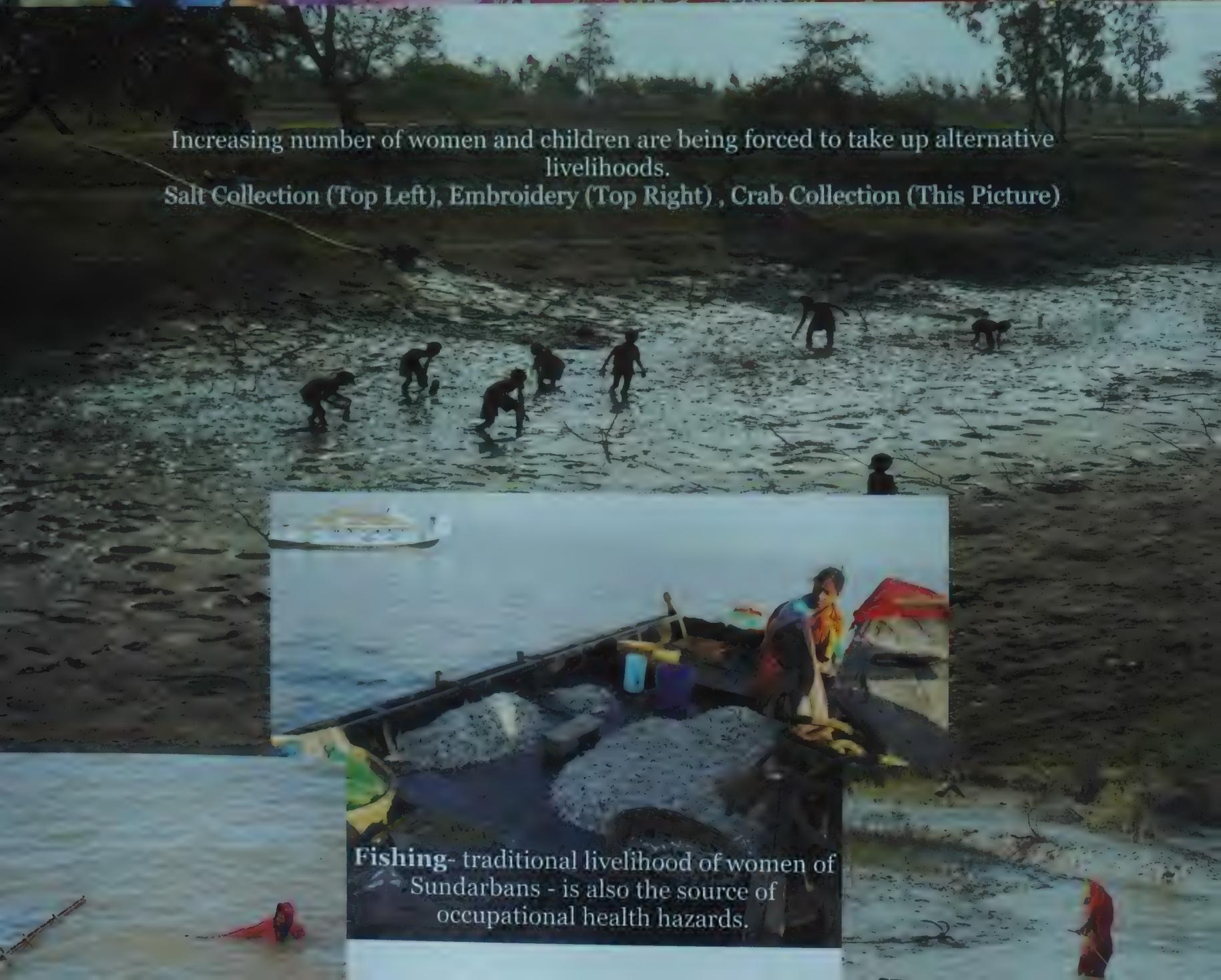


⁸UNESCO. 2009. Case studies on climate change and world heritage, UNESCO World Heritage Centre. Paris: France. (<http://whc.unesco.org/uploads/activities/documents/activity-473-1.pdf>).



Increasing number of women and children are being forced to take up alternative livelihoods.

Salt Collection (Top Left), Embroidery (Top Right) , Crab Collection (This Picture)



Fishing- traditional livelihood of women of Sundarbans - is also the source of occupational health hazards.

- A rapid ethnographic study in two villages.
- Several case studies on RMPs and their clients.

Below we discuss each of the above methods in brief.

Household survey

For the household survey, households were selected using a two-stage stratified sampling: first, all the 15 GPs were divided into two strata: deltaic (10) and non-deltaic (5). In the second stage, 30 primary sampling units (PSU) or villages were selected using the PPS (Probability Proportion to Size) method. Finally, 1200 households, with at least one child of 0-6 years age, were randomly selected from these 30 villages. The survey was conducted using a structured questionnaire, which primarily focused on the current health and nutritional status (age, height, weight, and midupper arm circumference) of the children, history related to their birth deliveries, health seeking behaviour, utilization of health care facilities, and out-of-pocket payments of the selected households related to child health care. More specifically, the investigation focused on two types of ailing children:

- (1) those who were hospitalized (for inpatient care) in last 365 days;
- (2) those who sought outpatient care in last 30 days;

Exit interview

For the exit interview, 104 OPD users of public health care facilities (PHC and BPHC) and 149 users of RMP clinics were interviewed immediately after their treatment was completed. Questions were usually answered by the attendants (relatives) of the ailing children. The interview focused primarily on three aspects: (1) patients' background, (2) treatment process of the provider to gauge the quality of care, and (3) users' perception about the quality of care.

Interviews with RMPs

RMPs are not officially recognized; hence, there is no official source of information regarding the number of RMPs and the location of their practice. It is, therefore, extremely difficult to apply standard sampling procedures for selecting a given number of respondents. Keeping this problem in mind, the information from the users of selected villages was used to track one leading RMP from each of the 30 selected villages. The focus of the interview was on the knowledge and practice on their clinical practice related to common child health problems (such as, diarrhea and ARI). In addition, several case studies were conducted on selected RMPs.

Interview with government providers

A set of government facilities was visited by the FHS research team to understand the supply-side environment regarding implementation of child health care programmes. The visit started from the office





of Block Medical and Health Officer (BMOH) and also included: (1) three Primary Health Centres (PHC), (2) 30 sub-centres, located near the selected villages, and (3) 16 Anganwadi centres (AWC) where nutritional supplements are provided to the children of 0–6 years. In all cases, the facility-in-charge was met and interviewed. The interview was guided by a checklist about information on availability of drugs and other critical inputs (for child health care), existing mechanisms for targeting poor users, major problems faced by the providers, and so on.

GIS mapping of all providers

An extensive mapping operation was carried out to identify and locate all health care providers, formal and informal, in the block. The mapping process was designed, implemented, and made ready to use through collaboration with Riddhi-Uddalak, a local technology consultant firm.

Rapid qualitative study

To acquire a 'thick description' of health care seeking behaviour of the people of the Sundarbans and to decode the complex linkage between climatic shock, livelihood adaptation, cultural environment and child health outcomes, a rapid ethnographic study was conducted in two villages, each from the deltaic and the non-deltaic region. The study was carried out by a trained anthropologist who spent a considerable period of time among the villagers and culled out the community's cultural response to climatic as well as health shocks.

Other sources of data

The primary data are supplemented by the following two other sets of data collected through the FHS research in 2009-10.

- **2010 FHS Survey:** The survey was carried out in all blocks of the Sundarbans and covered issues related to health and health care for a sample representing the population of all ages. The report based on this survey is available at www.dfid.gov.uk/r4d/PDF/Outputs/FutureHealth_RPC/sundarbans.pdf.
- **2010 FHS post-Aila Survey:** The survey was conducted in selected three blocks (Gosaba, Patharpratima, and Hingalganj) one year after the cyclone Aila hit the Sundarbans. The primary focus of this survey was to assess how the health seeking behaviour of the people changes due to a major climate shock.

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2. Child health in the Sundarbans: The present and the future



2.1. Introduction: Nirmal's story

We were very happy when Nirmal, our son, was born four years ago, after my wife had given birth to two daughters in two years. The happiness, however, soon gave way to a nightmare when we discovered that the child, at his crawling stage, had very weak legs. We sought advice from the village health worker (ASHA) but she was of little help. After one and half years, I took my boy to a nursing home in Diamond Harbour, the sub-divisional town, 40 km from our village. Two doctors checked my son and gave medicine and oil for massaging his legs. We tried all those stuffs for at least one year. In between, we visited the same nursing home several times, spending money beyond my capacity. However, there was no improvement. He could neither stand nor even crawl when he was two years old.



When he was two and a half years old, the Anganwari worker of our village advised my wife to take him to the Government hospital in Diamond Harbour. The doctors advised a surgical operation and hinted that he would require prolonged treatment. This would mean that we should continue the treatment for at least one year, visiting the hospital at regular intervals of two months. It would cost me Rs 300 per visit. Clearly, it would be extremely difficult for me.

At last, we decided to take our son to the village Ojha, a very famous woman with many miraculous powers. She applied plenty of jaributi (herbal plants) on him. The treatment is still on and we hope my son will stand on his own feet some day. I have now left it to our destiny.

— Gour Mondal, a villager of Patharpratima (name changed).

The parents of the child have turned fatalist not without reasons. The child, like many other children in the Sundarbans, is destined to live only on his parents' hopes since the world around him has failed to secure him a reasonably healthy life. The story corroborates the evidence thrown up by the 2010 FHS study, which revealed a depressing picture of children's health in the Sundarbans. This section supplements the picture with more recent evidence and attempts to highlight the key issues related to the health and nutrition status of the children.



2.2. Background

The key findings of the 2012 FHS study are based on the household survey conducted in 30 selected villages of Patharpratima. The survey collected data from 1200 households, all of which had at least one child of 0-6 years. The survey team could collect information on the background and current health status of 1503 children of 0-6 years belonging to these households. However, the anthropometric data (weight, height, MUAC, etc.) were collected only for the children of 0-5 years (1332). The age and sex-wise distribution of the sampled children is given in Table 2.1.

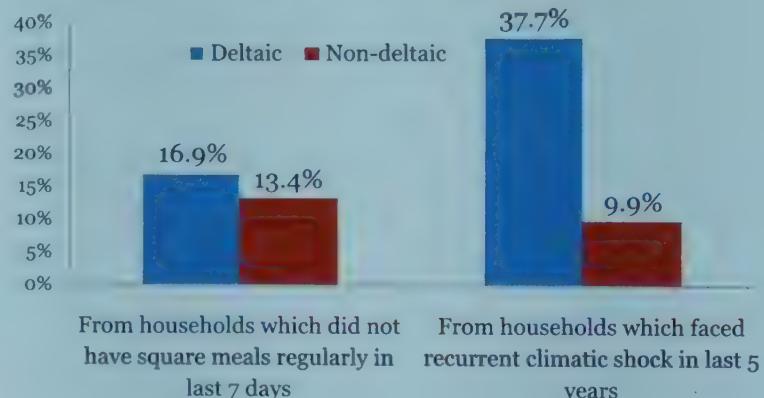
Table 2.1. Sample size of children, by age-group

Age of the child members	Male		Female		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
0 - 5 months	76	9.8	50	6.9	126	8.4
6 - 11 months	83	10.7	97	13.4	180	12.0
12 - 13 months	144	18.5	128	17.7	272	18.1
24 - 35 months	124	15.9	114	15.8	238	15.8
36 - 71 months	352	45.2	335	46.3	687	45.7
Total	779	100	724	100	1503	100

Figure 2.1 presents two important features of the sampled children, which have significant bearing on child health. As mentioned in Section 1, the sample was drawn according to the proportion of the population distributed between the deltaic (river-locked) and the non-deltaic villages of Patharpratima block. The households living in the deltaic villages face much more economic and climatic constraints than the non-deltaics due to their geographic location. This is confirmed by the data; for example, the households of 38 per cent of the children living in the deltaic areas reported experiences of facing climatic shocks (cyclones and floods) and consequent damages more than once in the last five years while only 10 per cent of the surveyed households in the non-deltaic villages reported so. However, the difference is less stark in self-assessed poverty; about 17 per cent of the children in the deltaic areas belonged to those households that could not afford to fully feed the children every day or any day during the last seven days (compared to 13 per cent in the non-deltaic areas).

The data on the background characteristics of the sample households, villages, and the mothers may also help understand the social and physical environment around the children. Most of the households (68%) were engaged in agricultural and livestock production while a small percentage (5%) was dependent on forests and rivers (woodcutting, honey collection and fishing). About 42 per cent of the children belonged

Figure 2.1. Percent of children experiencing acute poverty and recurrent climatic shock
(N: Deltaic = 889, Non-deltaic = 614)



The socioeconomic status of women—an important predictor of a child's healthy growth—is not very impressive either. Teenage marriage is very common since 54 per cent of the females aged 15-19 years were (currently) married compared to 6 per cent males in the same age group. About one-third of the women (34%) were illiterate compared to 23 per cent of the men in the sample. It is, however, important to add that the prevalence of illiteracy is much less (6%) among the youngest female population (10-14 years) implying that girls now have better access to school education compared to what their parents had. Economic dependence is glaring since almost all women in the 18-50 age group were primarily homemakers (housewives).



The physical environment surrounding the lives of the children is extremely challenging, especially in the deltaic zones. Nearly, 80 percent of the households lived in *kuccha* houses (made of mud, thatch and other locally available material) that could hardly put up any defence against major climatic events. More than a quarter of the households (27%) still practise open defecation. The major source of drinking water for more than three-quarters in the surveyed households was deep tube-well/ hand-pump. This is a vulnerable source, especially in the flood-prone areas, since once submerged in the saline floodwater, they become completely unusable. Recent development process has led to the extensive electrification of villages; yet still about two-third of the households have no electrical connection.

The exposure of a considerable number of households to major climatic shocks is an integral part of any discourse on the Sundarbans. Nature often takes its toll in terms of cyclonic storms and floods that breach the banks, inundate the localities, render people homeless, and make agricultural lands completely unusable for a few years. The most recent example of such calamities is the cyclone Aila, which devastated a large part of the Sundarbans in 2009. Within minutes, the storm and consequent high tide wiped out a large part of the river embankment, made thousands of villages disappear under water, killed hundreds of

people, and rendered more than 400,000 homeless. As shown in Figure 2.1, the deltaic areas are disproportionately vulnerable to these shocks. Table 2.2 shows that the impact of such calamities was indeed disastrous; half of the households affected by cyclones or floods experienced severe damages to their houses and agricultural land / crops when hit by the shocks. About 13 percent of the households faced serious damage in the sources of drinking water; however, the impact was stronger in deltaic areas (20%) compared to non-deltaics (4%). Further investigations also revealed that 65 percent of households in the deltaic and 33 per cent in the non-

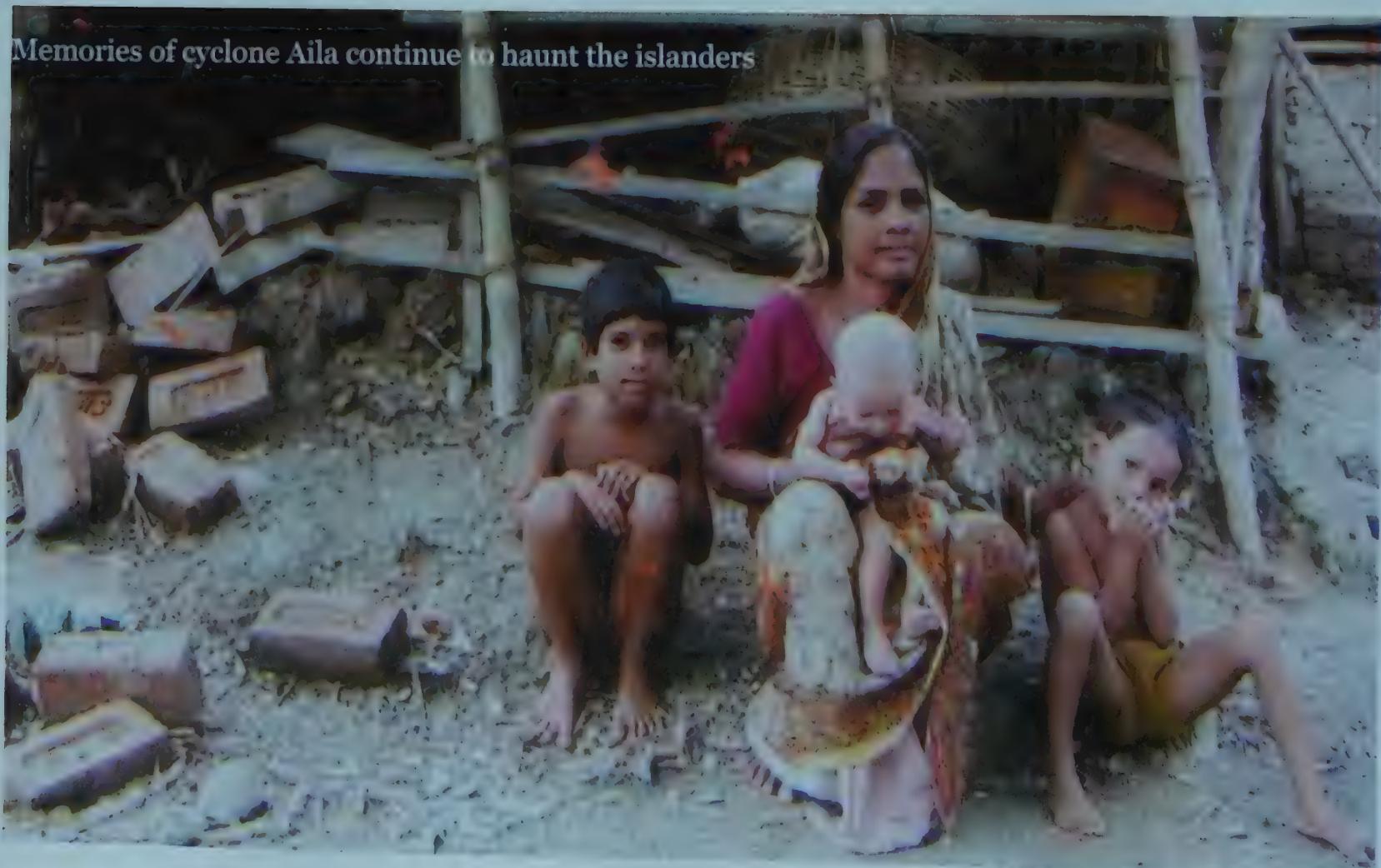
Table 2.2. Percentage of affected households that faced serious damages to their assets due to climate shocks (N=1145)

Heavily damaged due to climate shock	Percent of households
House	50
Livestock	12
Agricultural land/crops	50
Source of drinking water	13



deltaic areas faced serious problems in accessing the village roads after such shocks. Similarly, 54 percent of households of the deltaic and 18 percent of the non-deltaic villages experienced severe problems in accessing transport facilities (road and river).

In brief, the evidence presents a complex and challenging backdrop for a typical child in the Sundarbans to initiate his/ her journey to the future. By all evidence, the journey is likely to be challenged by a host of factors at every step. The geographic and climatic adversities coupled with poverty and underdevelopment would make it difficult to provide him/ her with adequate support and protection for a healthy life in future. How severe are these challenges in the context of producing and maintaining an acceptable level of child health and nutrition? Here we attempt to answer the question by exploring the key findings of the 2012 FHS study.



2.3. Key challenges

2.3.1. Child undernutrition prevails at a high level

Expectedly, the sorry state of children's health in the Sundarbans is reflected in their nutritional status. The anthropometric data on 1332 children (0-5 years) collected by the study team, and presented in Table 2.3, clearly show that more than one-third of the children are chronically

A little more than one - third of the children are chronically malnourished.

However, the prevalence is astoundingly high, almost 60%, for the girls of 1-3 years belonging to the poorer households.

under-nourished or stunted (i.e., low height for age). The scenario is equally bleak in case of acute under-nutrition, with about 39 percent of the children being underweight (i.e., low weight for age).



Several interesting issues come up when data are de-segregated by various parameters such as sex, location, age, and perceived poverty status of the children. For example, the inequity in chronic under-nutrition is quite glaring when the indicators are measured by different age groups. A little less than half of the children in the age group of 13-36 months were stunted compared to only 18 per cent of the children in 0-12 months. Similarly, the children of the poorest households were more likely (44%) to be stunted or underweight compared to those who belonged to households with apparently better economic status. There is no apparent gender inequity; however, the girls from the poorest households are more malnourished (46.1%) compared to the boys from the same set (41.9%). **More specifically, the girls of age 13-36 months from the poorest households are extremely vulnerable to chronic undernutrition (59%).**

Table 2.3. Nutritional status of the children (0-5 years) (N = 1332)

	Percentage of undernourished children					
	Stunted		Wasted		Underweight	
	< -2 SD	< -3 SD	< -2 SD	< -3 SD	< -2 SD	< -3 SD
Total	35.2	11.7	25.2	8.6	38.6	12.0
Sex						
Male	35.5	12.9	25.2	8.3	37.6	11.6
Female	35.0	10.5	25.3	8.9	39.6	12.5
Location						
Deltaic	32.9	11.0	23.9	7.6	37.5	10.7
Non-deltaic	38.5	12.8	27.2	10.0	40.2	13.9
Age						
0-12 months	18.3	4.9	21.7	6.5	18.9	5.9
13-24 months	41.3	15.1	17.0	8.5	33.2	8.9
25-36 months	45.8	13.5	27.3	10.4	48.9	16.1
37-60 months	37.6	13.5	30.9	9.0	49.0	15.5
Self-perceived poverty						
Poor	43.8	16.4	25.0	5.8	44.2	14.4
Less poor	33.6	10.9	25.3	9.8	37.5	11.6

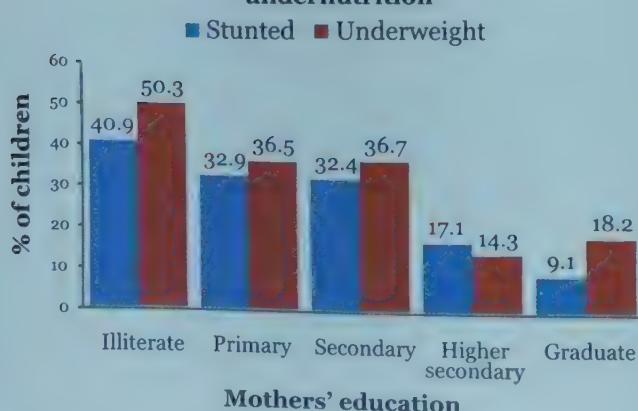
* Poor: those who reported to have no full square meal every day or any day during the last 7 days
Less poor: those who reported to have a full square meal every day during the last 7 days



received supplementary nutrition from the centre compared to 75 per cent in the non-deltaic region. However, more in-depth research is required to test this hypothesis.

It is, however, difficult to identify a single set of factors contributing to such a high degree of child under-nutrition. The complex system designed by poverty and underdevelopment, coupled with perpetual climatic shocks and consequent livelihood insecurity, helps the retardation in child growth perpetuate across generations. However, one less difficult way to capture the essence of the retarding process is to understand the mothers' status since the nutritional status of a mother is the single most important predictor of child survival. The household data reconfirm this—the prevalence of underweight among the children of underweight mothers (i.e., $BMI < 18.5$) was found to be

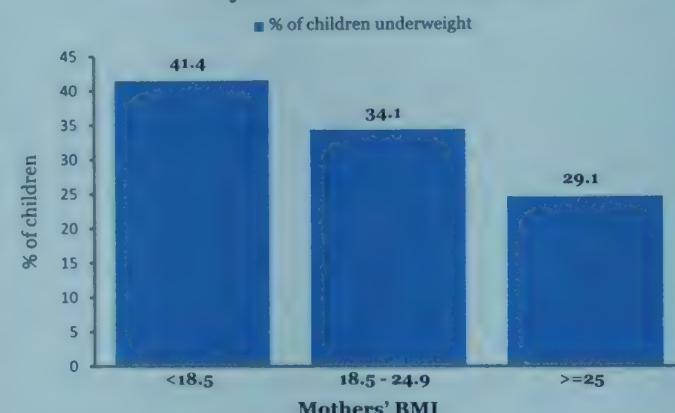
Figure 2.3. Mothers' education and child undernutrition



It is also interesting to note that the children in the deltaic region are better off than their non-deltaic counterparts in terms of nutritional status. This is a bit unexpected since the deltaic areas are less developed and more vulnerable to climatic shocks and geographical adversities. Several hypotheses may be forwarded to explain this seemingly inexplicable fact. It may be argued that, historically, the deltaic areas have received more attention from the development agencies, especially in nutritional services. The household survey data, for example, reflects a higher rate of uptake of the nutritional services provided by the Anganwadi centers (AWC) in the deltaic region—85 per cent of the children, who were registered to local AWC in the deltaic areas,

More than one-third of the mothers are underweight. The prevalence of acute under-nutrition among the children of malnourished mothers is much higher than among children of normal weight mothers.

Figure 2.2. Percentage of Underweight children, by the BMI of their mothers



higher (42%) compared to the children of normal or overweight mothers (Figure 2.2). The median weight of the mothers is 44.5 kg and the median height is 151 cm. Based on the body mass index (BMI) data, more than one-third (35%) of the mothers were underweight ($BMI < 18.5$).

The relation of under-nutrition to other key women's development indicators is also quite evident from the survey results. The link with mothers' education, a commonly used indicator of human development, is unambiguous as shown in Figure 2.3.

2.3.2. Extra burden of morbidity among children

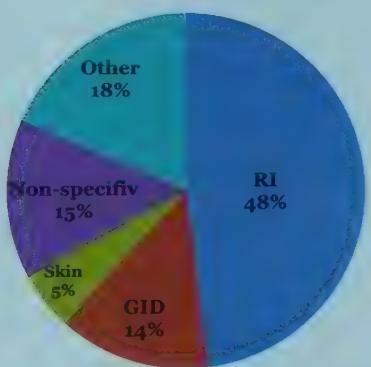
With such a massive burden of under-nutrition, one does not expect an impressively healthy environment for the children. The intrinsic vicious cycle of under-nutrition and morbidity — especially among the children — is well established and documented. In the present case, the link is reconfirmed. In the course of the household survey, mothers were asked if their children had suffered from any ailments during the last thirty days, or hospitalized in the last one year, preceding the survey. The types of treatment given and mother's knowledge about the symptoms of these diseases were also investigated. Despite the fact that mothers might have recall bias and their perception about ailments were not validated by any qualified medical personnel, the fragile health status of the children is well reflected in the collected data.



Among 1503 children, about two-thirds had suffered from at least one ailment in the last thirty days and 5.4 percent were hospitalized within the last one year. By a simple projection it would imply that about 0.3 million children were ill in one month and 26,000 required hospitalization in one year in the whole Sundarbans¹.

What ailments do the children suffer from? Analyzing the symptoms reported by the mothers of their ailing children and presented in Figure 2.4, it was seen that more than two-thirds of the reported cases could be attributed to three common ailments: (1) Respiratory infection (RI), (2) Gastro-intestinal disorders (GID), and (3) various skin problems. The most common ailments in the RI group were fever and cough while most of the GID symptoms indicated diarrheal symptoms (watery stool). The presence of skin problems (irritation, rash, etc.) is in all probability associated with the increasing salinity of water in the rivers and other water bodies, as evidenced from research in Bangladesh coastal area².

Figure 2.4. Distribution of cases, based on reported symptom (N = 1030)



The dominance of RI and GID in the disease profile of the children is also evident from the data on those children who were hospitalized. Among 81 cases of hospitalization, the diagnosis of 70 could be confirmed— about 37 per cent were admitted to hospital due to diarrhea/ dysentery and 31 per cent sought treatment for RI (pneumonia, wheezing cough, influenza, and other RI). In other words, children are particularly vulnerable to those ailments that have strong links with environmental degradation.

Prevalence of environmental common diseases is much higher among Sundarban's children. Two-thirds of all child ailments are related to respiratory, gastro-intestinal, and skin problems.

¹From the Census, children (0-6 years) constitute about 12% of the whole population. The estimate is based on the assumption of the Sundarbans' population roughly as 4 million.

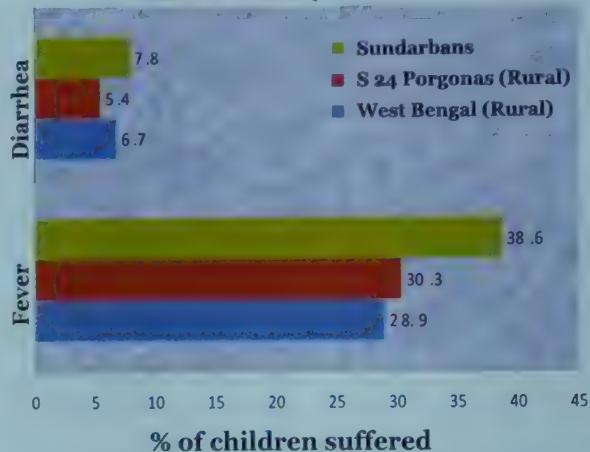
²CCC, 2009. Climate change and health impacts in Bangladesh. Climate Change Cell, Department of Environment, MoEF; Component 4b, CDMP, MoFDM. June 2009, Dhaka.
(http://www.climatechangecell.org.bd/publications/ResearchDocs/Climate_Change_and_Health.pdf).



How comparable are these ailment burdens with the same in areas beyond the Sundarbans? To explore the issue, a more in-depth investigation was carried out on the youngest children (a subset of the sample children) in the sample households to estimate the prevalence of diarrhea and fever—the two most common ailments. The results are compared with the District Level Household and Facility Survey (DLHS-3)³ results and presented in Figure 2.5. The results clearly reveal that the children of the Sundarbans are disproportionately burdened with common ailments compared to the district (South 24 Parganas) and the state (West Bengal) average. The proportion of children under age six who had at least one spell of fever during the last two weeks was almost ten percentage points higher compared to the state or the district average (DLHS-3).

The prevalence of diarrhea was also considerably higher in this region even though the survey was carried out in a relatively low-prevalent season (April-May). It is also to be noted that about one in five diarrhea cases was reported as severe (blood with stool).

Figure 2.5. Percent of children (0-6 years) suffered from common ailments during last 2 weeks (N = 1200)



2.3.3. *The thousand days window of opportunity to protect child health rights is wide open*

Child health experts, researchers, as well as the policy makers alike concur that the 1000 days between a woman's pregnancy and her child's second birthday offer a unique window of opportunity to give the child a healthy start in life. A child has a right to be able to grow, learn, and shape his/ her own future and the society has a responsibility to create this enabling environment. The minimum steps to protect a child's health right include: (1) adequate antenatal care (ANC) and nutrition for the mothers, (2) a safe environment and assistance by technically skilled personnel during birth delivery, (3) clinically supervised neonatal care with special focus on low-birth weight children followed by full preventive care, (4) adherence to the universally accepted good feeding practice, with immediate breastfeeding and optimal complementary feeding starting at six months of age, (5) scrupulous and regular health care based on universally accepted quality norms, and (6) consistent nutrition care of the child with a special focus on children of 0-2 years. In addition, the child should also be directed towards good hygiene practices.

How many of these rights are being adequately protected in the Sundarbans? Below we present a broad assessment of each in the context of the children in the Sundarbans.

2.3.3.1 Significant achievement in ANC, but mothers' nutrition needs to be addressed

The 2012 FHS survey results are juxtaposed in Table 2.4 with two other survey results—(1) 2010 FHS study

³DLHS-3 is the 3rd round of a national level survey, commissioned by the Government of India and primarily focused on the Reproductive and Child health aspects. The survey was conducted in 2007-08 in all districts of the country.

that covered all blocks of the Sundarbans, and (2) DLHS-3 (for West Bengal) survey (2007-08). The results reflect a mixed picture.

Table 2.4. Selected maternal health care indicators with respect to last-born child (N: 1200)

Maternal health care indicators	FHS 2012 (Patharpratima)	FHS 2010 (Sundarbans)	DLHS-West Bengal (2007-08)
% of mothers who received any ANC during pregnancy	98.6	95.7	96.1
% of mothers who had ANC in the 1st trimester	60.0	60.3	42.5
% of mothers who received at least one TT injection	99.0	97.9	94.8
% of mothers who received supplementary nutrition from the local Anganwadi centre during pregnancy	62.0	53.2	—
% of mothers who received at least one Postnatal care	50.0	23.8	56.9

On the bright side, most of the maternal health care indicators reflect a highly satisfactory progress in the

The coverage of maternal health care, especially antenatal care, is significantly high, indicating success of NRHM. However, many women still remain uncovered by postnatal care and supplementary nutrition. More than one-third of the mothers were underweight.

study area. For example, almost all mothers received any number of antenatal care (ANC) although only sixty per cent of them received first ANC in the first trimester. The scenario was not so bright with respect to postnatal care (PNC) and supplementary nutrition of the mothers although, in each case, the indicators showed significant progress in recent years. Mothers' nutrition is particularly of great concern since more than one-third of the mothers (35%) were underweight ($BMI < 18.5$). It is important to note that the **prevalence of underweight among the children of underweight mothers was much higher than in children of normal or overweight mothers** (see Figure 2.2).

2.3.3.2 More than half of the children were born in predictably less safe condition

The second component of child health rights is related to their birth event— whether or not he/ she was born in a safe hand and in a sanitized environment. According to the household survey, a little less than half (47%) of the mothers delivered births of their youngest children (0-6 years) in an institution (Table 2.5); however the rate is higher (54%) if only the children below one year age (i.e., births delivered during 2011-12) are considered. This is slightly higher than what it was five years ago in rural West Bengal (43% (DLHS-3)), but predictably much less than what it is now. Even by a generous estimate, **about fifty-five per cent of the births are now being delivered at home**.

The story gets more alarming once we add that **only five per cent of these home deliveries were assisted by qualified professionals** (doctor/ trained nurse). The link between social deprivation and home delivery is also remarkable— three out of four births were delivered at home in case of mothers who



Less than half of the births (47%) were delivered at any institution – 3 out of 4 illiterate mothers delivered births of their youngest child at home assisted mostly by untrained hands.

Facilities of the NGOs in
Sundarbans meet
minuscule portion
of the demand.



were illiterate or when the child was of the third or higher birth order.

Table 2.5. Place of birth delivery with respect to last-born child (N: 1200)

	Percentage of mothers who delivered birth, by place of delivery			
	Home Delivery	Govt. hospital	Institution Delivery Private / N G O	R M P / Others
Total	53	28	17	2
Mother's education				
Illiterate	74	12	3	3
Primary	54	28	16	2
Secondary +	36	38	24	2
Economic condition				
Poor	63	23	12	2
Less Poor	52	29	17	2
Birth order				
First child	35	39	24	2
Second	62	23	14	2
Third and higher	78	15	6	2



2.3.3.3 Excellent record of immunization, but neonatal care needs to be focused

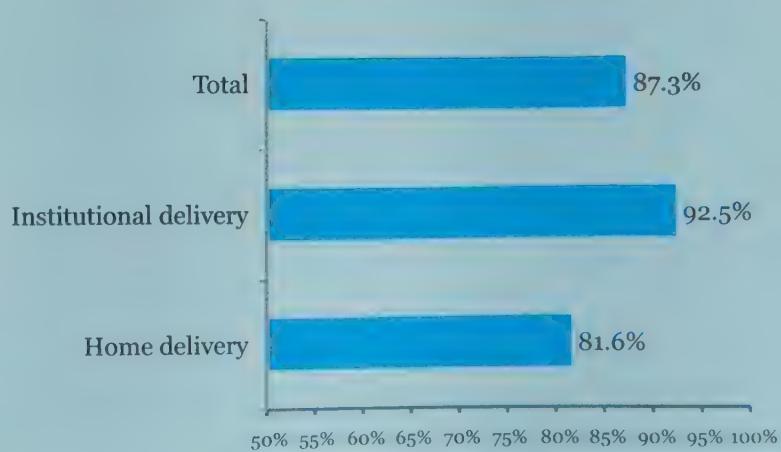
At least about a quarter (24%) of all children of age 0-12 months took birth and spent the first week of their lives without any supervision from any health worker.

Immunization record is excellent, but timeliness needs to be improved.

The urgency of proper neonatal care can hardly be overstated. This is particularly true in the Sundarbans where more than half of the children are born at home. The home-born children usually remain out of clinical supervision unless they are born with severe complications. Hence it is important for the community health workers to visit the child at home immediately after his/ her birth and take appropriate action (advise or refer). The evidence, however, reveals a sorry state of affairs as far as this aspect is concerned. Among all home-born children of age 0-12 months, only forty-eight per cent were visited and checked by any health worker (ANM, ASHA or AWW) within seven days after birth. This would imply that at least about a quarter (24%) of all children of age 0-12 months⁴ took birth and spent the first week of their lives without any supervision from any health worker.

The immunization records, on the other hand, show a much better response from the health care system. Eighty seven per cent of the children were fully immunized (Figure 2.6). The dropout rate⁵ in immunization was also much lower in the Sundarbans than the state average (6.7%, compared to 13.9% in rural West Bengal). There was no perceivable gender bias among the immunized children, but, as expected, the full immunization rate was much lower for the home-born children— roughly one in five in this category remained partially or totally unprotected, compared to

Figure 2.6. Percentage of fully immunized children (12-23 months), by place of delivery



⁴The home delivery rate for 0-12 months children was 46%. Among them 48% of them were checked, i.e., 52% remained unchecked within one week after birth. Hence, $46\% \times 52\% = 24\%$ of all children (0-12 months) remained unchecked.

⁵By drop out rate it usually means BCG to Measles drop out rate, calculated by $(BCG - Measles) \times 100 / BCG$



one in twelve of those who were born in hospitals. It is also important to note that the scenario looks less bright if the timeliness of the immunization is considered. For example, among those who got BCG vaccination, 77 per cent got it on time. The irregularity is more glaring for the 3rd doses; for example, **only 35 per cent and 26 per cent of the immunized children got the Polio and DPT third dose respectively on time.**

2.3.3.4 Most of the children are improperly fed

A child from a poor household born without adequate antenatal care and inappropriately fed during the first few months of his/ her life makes a perfect recipe for under-nutrition and associated morbidity, a common phenomenon in the Sundarbans. For example, initiating breastfeeding immediately after

birth and feeding the child exclusively on breast-milk for the first five months, which are two of the most critical determinants of a child's present and future health, are practices that fare poorly in the context of the Sundarbans. **About sixty per cent of the children did not receive breast-milk immediately after birth** (Figure 2.7). A case for more critical concern is lack of exclusive breastfeeding— about two-thirds of the children, who were 0-12 months old during the survey, did not receive enough of this essential ingredient (Figure 2.7).

Severe imbalance in feeding practices is visible— about two-thirds of the children (0-12 months) grew up without exclusive breastfeeding for five months. Social norms and mothers' poor health status help perpetuate the imbalance.

Figure 2.7a. % of children of age 0-12 months who were immediately breastfed after birth

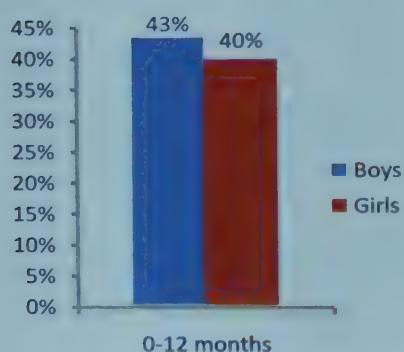
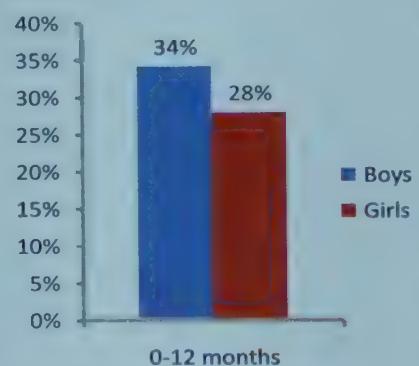


Figure 2.7b. % of children of age 0-12 months who were exclusively breastfed for 5-6 months



Timeliness of complementary solid food from the sixth month, in addition to breast-milk, is another important indicator of good feeding practice. In the present case, about two-thirds of the male children and seventy-seven per cent of the females received complementary food on time. Comparing the result with that presented in Figure 2.7, a usual imbalance in the feeding practices— prevalent in a typical rural set-up — emerges; a male child, if exclusively breastfed

for five months, is more likely to continue receiving exclusive breastfeed even beyond the period than a female child is, leading often to an irreversible damage to his growth.

What are the factors behind the imbalance in feeding practices (especially the weak prevalence of exclusive breastfeeding)? An in-depth discussion with mothers revealed that there were two key factors: (1) societal norms reflected in a mix of traditional and contemporary feeding practices, and (2) mothers' health. Mothers are still gripped by traditional beliefs; for example, many mothers still discard colostrums, believing that it is deleterious to the child. Similarly, many infants are still fed cow's milk, water, or honey

during the initial days after birth for the establishment of lactation. However, modern practices like giving fast food (laddu, snacks, noodles) coupled with an increasing faith in packaged baby food in place of breast-milk have also intruded into their daily life via the demonstration effect of cities. Since these 'modern' junks are more easily available in non-deltaic villages, it could partly explain the higher prevalence of under-nutrition in these parts compared to the deltaic region. Mothers' poor health is also responsible; it is a common experience to hear mothers complaining about 'drying up' of breast-milk very soon after childbirth.

2.3.3.5 Unregulated and questionable quality of care

How well are children's health care needs addressed, especially when they are ill? In an ideal situation, the protection of an ailing child's right to seek health care would imply his/ her easy access to a reliable, scientifically tested, and affordable source of medical care. However, the evidence paints

About 85% of the ailing children were treated by RMPs, who practise modern medicines without formal training or legal sanction, raising serious questions about the quality of curative care the children are receiving.

a dismal picture of the ground reality. In general, most of the parents seek some sort of treatment for their children when they are ill. This is evident from the result that around 96 per cent of the children reported ailing any time during the reference period (last 30 days) were taken to any qualified or unqualified provider for treatment. However, results also unequivocally confirm an overwhelming dominance of the Rural Medical Practitioners (RMPs), the private health care providers who practise modern medicines without any formal training or legal sanction and are also identified as 'unqualified'/ 'less than fully qualified' or simply 'quacks', as the primary source of out-patient treatment. As Table 2.6 shows,

about 85 per cent of the ailing children sought treatment from RMPs while government facilities were visited by only 4 per cent.



Table 2.6. Source of out-patient care for ailing children, Sundarbans 2012

Source of treatment	Percentage of ailing children sought care
Rural Medical Practitioners (RMPs)	85.1
Any government facility	4.1
Private qualified doctor	6.4
NGO / Charity	0.2
Government doctor doing private practice	2.6
Community health worker	1.2
Others	0.4



Several issues, which emerged from the household survey and the parallel qualitative research on the health seeking behaviour, are worth noting in this context:

- 1) **Dependence on RMPs for treatment is much higher for childhood ailments compared to adult cases.** According to the 2010 FHS study, the RMPs treated 62 per cent of the population (adults as well as children) in the Sundarbans while the share was much higher (about 80%) for the children. The possible explanation of this behaviour is that it is usually the mother's responsibility to take her ailing child to a doctor, and the RMPs, who practise within the village, are the easiest option for her.
- 2) The mothers were asked to explain the reasons for seeking treatment (for their children) from the RMPs. Four factors clearly stood out as the **strongest predictors: (a) Proximity of RMP clinic, (b) availability at all times, (c) advantage of receiving treatment and medicines on credit, and (d) trust on RMPs.** The combination of these factors is further topped by a set of clinical protocols, which is often indistinguishable from the one the 'qualified' doctors follow (see Section 3 for more on this). Clearly, the combination of these factors makes a formidable package of attraction that is hard to beat.
- 3) That the price of medical care also plays an important role is quite evident from the data even though the mothers did not explicitly highlight it. According to the survey results (Table 2.7), on average (median), an RMP client had to travel about one km to reach the clinic, while those, who availed the services of a public facility, travelled about three km. Similarly, it would cost at least Rs. 240 less to the parents of an ailing child if he/ she is treated by an RMP instead of a PHC doctor.

Table 2.7. Median distance travelled, travel time, and out-of-pocket expenditure for the treatment of children, by source of care, Sundarbans 2012

	RMP	Government Facilities	Private Qualified
Median distance travelled (km)	1	3	12
Median travel time (Minutes)	15	25	80
Median out-of-pocket expenditure (Rs.)	220	460	550

- 4) Given that the informal providers (i.e., the RMPs) practise without any recognized and universally accepted formal training process, there remains a serious question about the quality of their care and its possible (harmful) implications on child health⁶. However, it is also hard to straitjacket an RMP as one who could only do harm; at least the villagers would not agree with that. About 77 per cent of the children who were treated by the RMPs were perceived (by their mothers) as 'cured', while only 0.6 per cent cases 'worsened' and the rest remained in between (i.e., the 'problem continues'). The evidence collected through in-depth discussions with women reveal a strong trust bondage between the rural women and

⁶See Section 3 for a detailed analysis on this issue.

these health care providers (Box 2.1). This may apparently sound puzzling or irrational to a formally trained health professional, who usually holds clinical standard as the sole determinant of health outcome.

Box 2.1. RMPs: Saviours or sinners?

“So, why don't you contact ANM didi (the community health worker)?” asked the young member of the FHS research team during an in-depth discussion on the use of local health facilities with a group of old women in a village under the GP Ramganga. “The local Hature (RMP) is our first choice”, they had responded without hesitation a little while ago when they were asked about their first source of treatment for any minor ailment of children. They were grannies and they knew what was good for their grandchildren.

“O anek bhalo chikitsa kore (he treats much better than the ANM)” was their response. Further, they can approach the RMPs along with their daughters-in-law without any male escort. “Gharer cheler moto, or khache lajja korena (like our own son, we feel free with him)”. As the RMPs are available within the village 24x7, they are more accessible than any other providers.

“Daklei ase” (always available on call), someone declared. The young team member is now convinced.



As mentioned earlier, the survey also collected data on the children who were hospitalized within the span of the last 365 days. The hospitalization rate was 5.4 per cent, expectedly higher than the hospitalization rate of the adult population⁷. Several points are worth noting in the context of children's in-patient care. First, about three quarters of total hospitalized children sought admission in the public hospitals reflecting the absolute dominance of the government in providing child in-patient care. Second, the dominance of the public providers does not necessarily indicate good utilization of the local government hospitals⁸ since one-third of the public clients sought treatment from the Sub-divisional hospital (SDH) located at Kakdwip, the nearest big town (25 km) or Diamond Harbour or to Kolkata, the capital city (90 km), while another one-third were treated elsewhere outside the block. This apparent trend of bypassing the local system was possibly boosted by an improving communication system and a deteriorating local public health care delivery system. The hypothesis of poor credibility of the local public hospital was also supported by people's perception— about 75 per cent of the outgoers pointed out the availability of 'good' doctors (at the upper-tier facilities outside the block) as the primary factor behind their bypassing behaviour. Finally, the economic burden on the parents of hospitalized children, due to high financial drain to pay for travel, medicines, hospital fees etc., was considerably high. On average, a poor household in the Sundarbans spent about Rs. 1040 when a child member got admitted in a public hospital within the block. The outgoers, on the other hand, spent five times higher (Rs.5020) on average when their child was taken to Kakdwip and twenty-four times higher

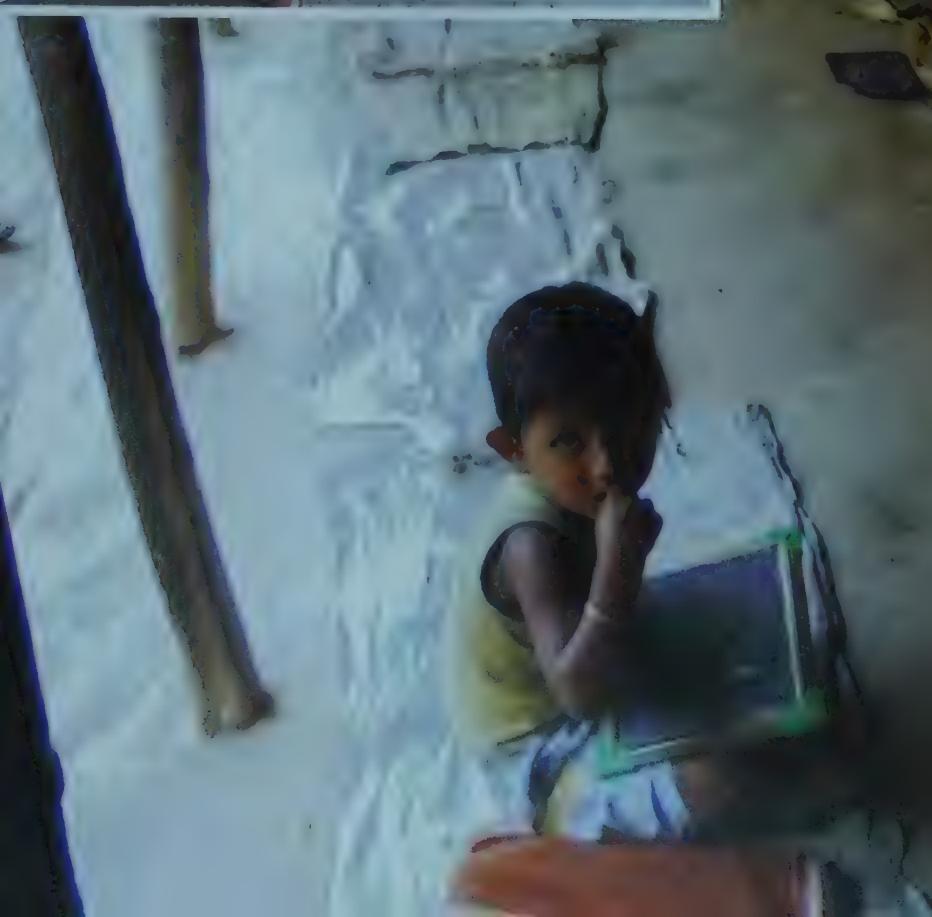
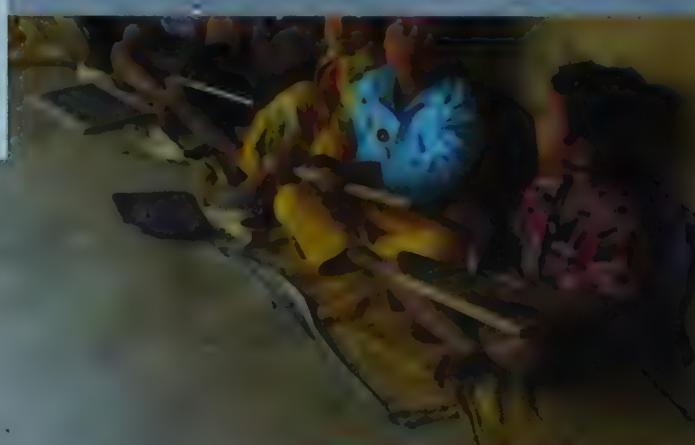
Significant portions of the children of 0-2 years are still deprived of the basic nutrition services. Interestingly, the deprivation is relatively higher in non-deltaic areas.

⁷According to 2010 FHS study, estimated rate of hospitalization for aggregate population for the Sundarbans was 4.2%.

⁸There are four public health centers in Patharpratima block (3 PHCs and 1 Block PHC) with basic in-patient care facilities. However, effectively it is one (the BPHC) since people hardly seek in-patient care from the PHCs.



ICDS centers have high enrollment level but have a long way to go to ensure spot feeding



(Rs. 24960) when taken to Kolkata. The consequence of such a financial shock is often catastrophic which forced about 15 per cent of the affected households to sell off some of their assets (land, ornaments, etc.) and 75 per cent to borrow cash for paying bills related to hospitalization (Box 2.2).

Box 2.2. Hospitalization: Saved a child but killed her family

Mala Mandal (name changed) is a 17-year-old married woman of Patharpratima block. Both her husband and brother-in-law are van-pullers. Mala delivered her first baby a year ago in a private nursing home at Patharpratima. The delivery was normal but the baby was motionless with feeble breathing. The doctor shifted the baby to a special care unit and put her on oxygen and IV saline. After almost three hours, she cried. The doctor prescribed many medicines and kept the baby in the unit for the next seven days.

The baby survived but with a high cost. To meet the medical bill of Rs. 40,000 Mala's family mopped up all their savings and still had to borrow a large sum from neighbours and relatives. A year is gone, still half of the loan is pending and they do not know how to repay this amount. The overhanging burden of debt has already forced them to cut consumption of food and some other necessities.

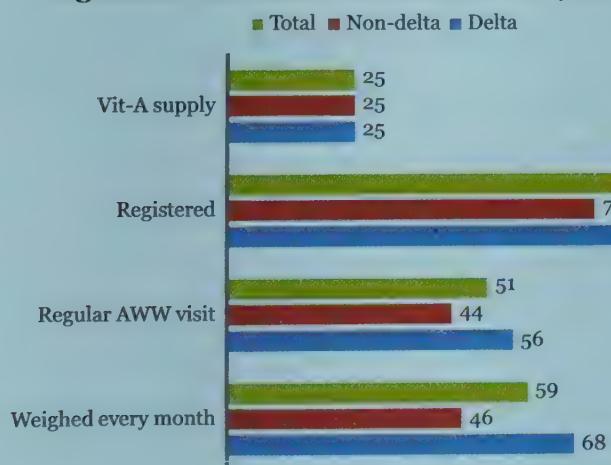
The baby has completed a year, but is largely inactive. Neighbours suggest that her mother take her to a good doctor, but how can they? Who will pay for it?



2.3.3.6 ICDS provides extensive nutrition care but there is still a long way to go

ICDS (Integrated Child Development Services) programme is the most prominent external source of comprehensive nutrition care for the children of 0-6 years, pregnant women, and lactating mothers. In the Sundarbans, as in other areas, the programme is implemented through community-level Anganwadi centres (AWC). The programme approaches child health holistically and comprises health, nutrition and education components for the target group of population. The range of services includes growth monitoring, immunization, health checkups and supplementary feeding, as well as nutrition and health education to improve the childcare and feeding practices that mothers adopt.

Figure 2.8. Nutrition services provided by Anganwadi workers to children of 0-2 years

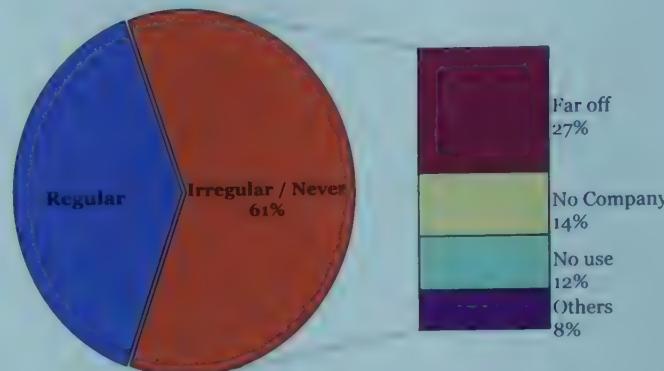


The supplementary nutrition provided by the AWCs is usually targeted at children of 3-6 years who can visit the centre on a regular basis. However, the origin of child malnutrition remains almost entirely embedded in the first two to three years of life. Hence, in many cases, a child starts getting supplement nutrition when under-nutrition has already set in. It is therefore extremely important for a nutrition worker to focus on children of 0-3 years, monitor their weight and growth, and make sure the mothers follow appropriate feeding practice and improve nutrition using the family food budget.



The evidence presented in Figure 2.8 show that significant portions of the children of 0-2 years are still deprived of the basic nutrition services. Interestingly, the deprivation is relatively higher in non-deltaic areas; for example, only 44 per cent mothers in non-deltaic areas— compared to 56 per cent in the deltaic— reported regular visit of anganwadi workers at their homes (at least once in a month in the last three months). The other parameters also reflect a similar discrepancy with the only exception being in case of the distribution of Vit-A oil, where the performance was equally worse.

Figure 2.9. Distribution of children 3-6 years, by regularity of using ICDS service



Is the situation better in the case of the children of 3-6 years? Evidently not, as Figure 2.9 shows; only 39 per cent of the children in this age group were using the ICDS services on a regular basis. Distance was perceived as the topmost reason for irregularity or non-utilization of the services (see the right panel in Figure 2.9 that shows the distribution of these users, by 'reasons'). It is also notable that unlike the case of 0-2 years, there was no perceivable difference in utilization rates between the deltaic and non-deltaic areas.

There is also not much scope to celebrate in the context of the utilization of nutritional services provided by the AWCs to children of 3-6 years. For example, among those who were registered at AWCs, 61 per cent of all and 63 per cent of underweight children attended the centres for 15 days or more in the last 30 days and received supplementary nutrition. It is also interesting to note that most of the regular attendees (92%) carried their meals home. The possible implication of this behaviour is that the child's meal is shared with some others in the household or is taken as the principal meal (lunch); consequently, the purpose of supplementary nutrition risks being less effective.

The children of 3-6 years are most likely to be registered at the local AWC. However, only a fraction of them (61%) will regularly attend the centre and receive supplementary nutrition meal. It is even less probable to see them eating the meal at the centre (8%).

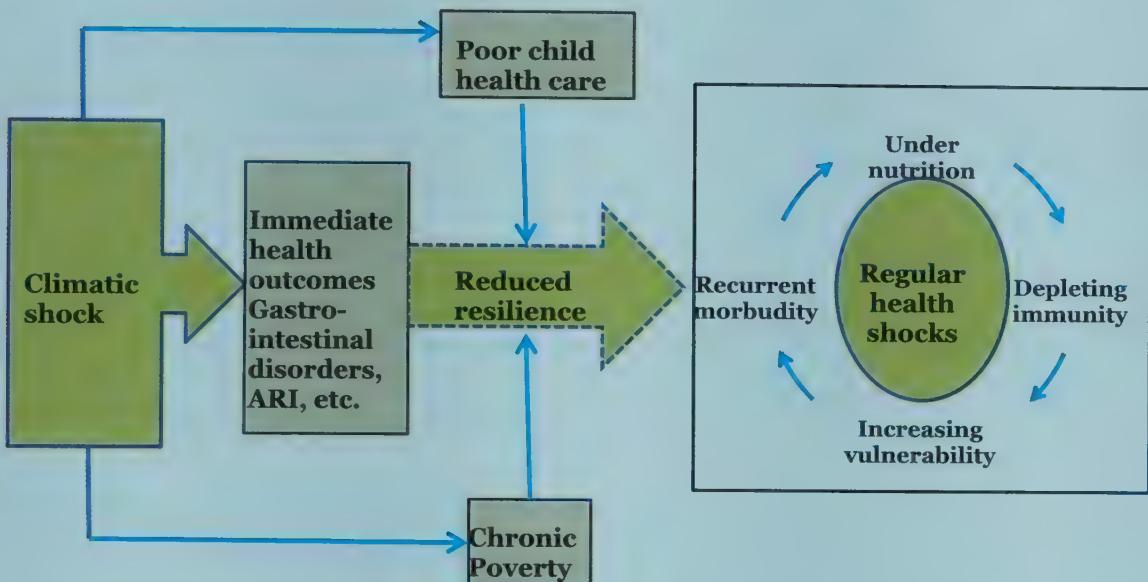
The evidence regarding the uptake of nutritional services by children of 3-6 years points at the following plausible scenario: on average, a child is more likely to be registered at the local AWC; much less probable, however, is that he/ she would attend the centre regularly (i.e., at least 15 days in a month) and receive the supplementary nutrition. The probability is even lower that the child would eat the meal at the centre. About the same fraction of the children (64%) is likely to receive other services, such as growth monitoring or weighing the children.

2.3.4. Climatic shocks trigger ill health and undernutrition

The people of the Sundarbans face two types of climatic threats. First, the recurrently occurring major climatic events, such as cyclonic storms and floods, which directly hit the life and livelihood of the islanders. The second threat, which is less direct but closely linked to the first, is due to increasing ecological imbalance caused by global warming and the consequent rise in sea level. In the last two decades, four islands have already gone under the



Figure 2.10. Climatic shock and its impact on child health



sea creating more than 6000 climatic refugees. Almost 44 sq. km of the Sundarbans has already gone under the water⁹. By 2020, as a recent research indicates, 15 per cent of the Sundarbans' habitable land will sink under the sea and turn many more thousands of poor people into climatic refugees¹⁰.

The present study focuses on the first threat (that is, the threat of major climatic shocks). Conceptually, a climate shock may produce two types of impacts on child health (Figure 2.10). First is the immediate impact, for example, sudden rise in the incidence of flood related diseases (e.g., diarrhea and respiratory infections) primarily among children. The second is a long run extension of the immediate effect; the shock hits the health care infrastructure, makes the already weak system more inaccessible, and deprives the affected children from timely or quality-assured medical attention. At the same time, it erodes the livelihood opportunities of the affected population and sucks the poor people deep into chronic poverty and resulting food insecurity. These effects, in combination, trigger child under-nutrition and strengthen the vicious cycle between recurrent morbidity and under-nutrition.

Conceptually, therefore, the climatic shocks — often termed as covariate shocks that affect all members of a

⁹Hazra S, Samanta K, Mukhopadhyay A, Akhand A. 2010. Temporal change detection (2001-2008): Study of Sundarban. Kolkata: Jadavpur University, School of Oceanographic Studies.

¹⁰Hazra S, Samanta B. 2009. Studies in selected sectors of Mousuni gram panchayat of Namkhana development block for climate change adaptation and awareness. Kolkata: Jadavpur Univ, School of Oceanographic Studies.

¹⁰Bhaumik S. 2003. Fears rise for sinking Sundarbans. BBC News. (http://news.bbc.co.uk/2/hi/south_asia/3102948.stm).

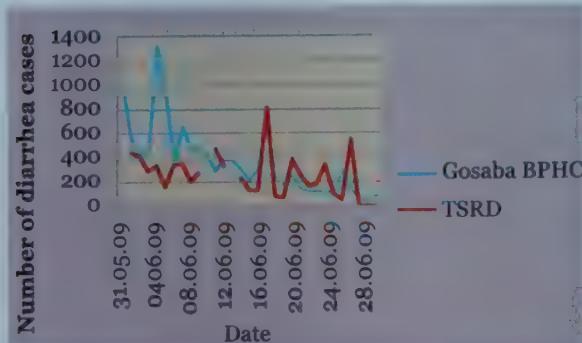
Mukhopadhyay A. 2009. Cyclone Aila and the Sundarbans: An enquiry into the disaster and politics of aid and relief.

Mahanirban Calcutta Research Group. Kolkata: Timir Printing Works Pvt. Ltd.



community or region — are confounded by the regular or idiosyncratic shocks that affect only a particular individual or household; for example the regular illness of household members. As Figure 2.10 shows, a climatic disaster, such as Aila, is most likely to create some measurable covariate waves of health hazard in the short-run (for example, episodes of diarrhea of children immediately after a flood). However, the waves would become invisible but continue to weaken the resilience of the community and join the streams of regular (or idiosyncratic) spells of illness and under-nutrition in the long run. Ironically, the coping strategies adopted by a household to deal with the visible waves of climatic disaster often reinforce the invisible damage; for example, an infant may be deprived of breastfeeding or a young child may drop out of school when his/ her mother decides to join the workforce to compensate the climate-induced loss in livelihood (Box 2.3).

Figure 2.11. Daily number of diarrhea cases attending Gosaba BPHC and Rangabelia TSRD clinic after Cyclone Aila (May 31 - June 30, 2009)



collected for a post-disaster study by FHS¹¹ and presented in Figure 2.11 shows the registered number of diarrhea cases in two health clinics of a block in the Sundarbans (Gosaba)— one run by the government (BPHC) and the other by an NGO (TSRD)— immediately after the Aila disaster (May 25, 2009). As the graphs show, the arrival of diarrhea cases (out-patient) was abnormally high in the initial weeks (May 31 onwards) — as high as 1000-1300 per day at the BPHC and 400-800 at the TSRD clinic. The rate gradually climbed down in the later phase possibly due to extensive camp-based treatment by the government and non-government doctors in remote areas. It is also noteworthy that total admission (in-patient) for diarrhea at the same BPHC shot up to 248 in the post-Aila month (i.e., June, 2009) from just 18 in the pre-Aila month (i.e., May, 2009). Although no information was available on the age of the patients, discussions with the facility-in-charges confirmed that most of them were children of 0-5 years.

Box 2.3. A flood changed her life

“My father worked as a security guard in Bhubaneswar. We lived in a joint family and my uncle used to look after the land we owned. Earlier we had 10-12 bighas (1.4 hectare) of land. After the flood last year, most of our land became saline, leaving us with only 2 bighas of cultivable land. My uncle asked us to make separate arrangements for ourselves. We moved out and started living in a tent— covered by a plastic sheet— at a relief center run by the local NGO. The money my father sent us was not enough to feed the family of five; so my mother started to work as a daily labourer at Ramganga. The place was quite far from our village, so she could not spend much time at home. I had to take care of all household chores and my other three siblings— the youngest one was just 4 months old. I had to drop out of the school— how could I manage both?”

—Shefali Mandal (16 year, name changed),
Patharpratima

The immediate impacts of major climatic shocks on the children are quite visible. However, more serious are the long run impacts which invisibly strengthen the malnutrition-morbidity cycle through weakened resilience of the people.

¹¹IIHMR. 2010. Health care in the Sundarbans (India): Challenges and plan for a better future.

People's perception regarding the impact of climate shock was also consistent with the conceptual link. The FHS research team conducted a Hazard Ranking Exercise (a participatory rural appraisal technique) in a village (Herambagopalpur) with selected groups of villagers¹². As a participatory research technique, this tool helps a community to identify hazardous natural events that affect them most in terms of frequency, duration, disease outbreak, magnitude of damage, etc. Participants were asked to give a number out of ten in each dimension of a shock according to their perceived severity. A higher number reflects a higher risk in each shock (Table 2.8). Participants chose 'flood' and 'cyclone' as the most frequent hazards and reported that flood is more severe in terms of duration, infrastructure and livelihood damage, food insecurity and disease outbreak. On the other hand, in terms of frequency and lack of early warning, cyclone is the severest hazard.



Table 2.8. Hazard Ranking Exercise in a Participatory Rural Appraisal (0-10 scale)

Natural Hazards	Frequency	Duration	Getting early warning	Infrastructure and livelihood damage	Food insecurity	Disease outbreak
Flood	7	9	3	8	6	9
Cyclone	9	2	8	7	5	2

Migration and change in health seeking behaviour seem to be the two most prominent adaptive routes through which climatic hazards could potentially affect child health. The repeated climatic shocks make it harder for a farmer or an agricultural labourer to draw his livelihood from the agriculture. Consequently, people, especially the young males, tend to migrate to cities looking for jobs and new settlement. There is no official estimate about the magnitude of this environmental exodus but the anecdotal evidence paint a gloomy picture. This is also reflected in the present survey where about 15 per cent of mothers reported that their husbands spent most of the time in Kolkata or other big cities in the last one year¹³.

What happened to the child's health care when the husband or any other male member was out on work? More than one-third of the women, who had to negotiate the health problems of their children on their own (due to husband's migration), faced several problems, such as shortage in financial and human resources. A natural consequence, in this situation, is a shift in health seeking behaviour—the mothers would seek health care from the nearest places since she would have no male member to accompany her to the doctors. The 2010 FHS post-Aila survey, for example, revealed a significant switch in people's dependence on RMPs; about 83 per cent of ailing children in Patharpratima were treated by the RMPs one year after Aila, compared to 67 per cent in the pre-Aila period. The possible health consequences of seeking health care from the unrecognized sources, such as RMP, have been discussed earlier.

¹²For details on Climate Hazard Ranking Exercise, see "Participatory tools and techniques for assessing climate change impacts and exploring adaptation options", published by UKAID. Available at: <http://www.forestrynepal.org/images/publications/Final%20CC-Tools.pdf>

¹³This is, however, a gross underestimation of migration, since the number does not include (1) the unmarried males, and (2) the cases when both husbands and wives or the whole family had migrated.



2.4. Conclusion

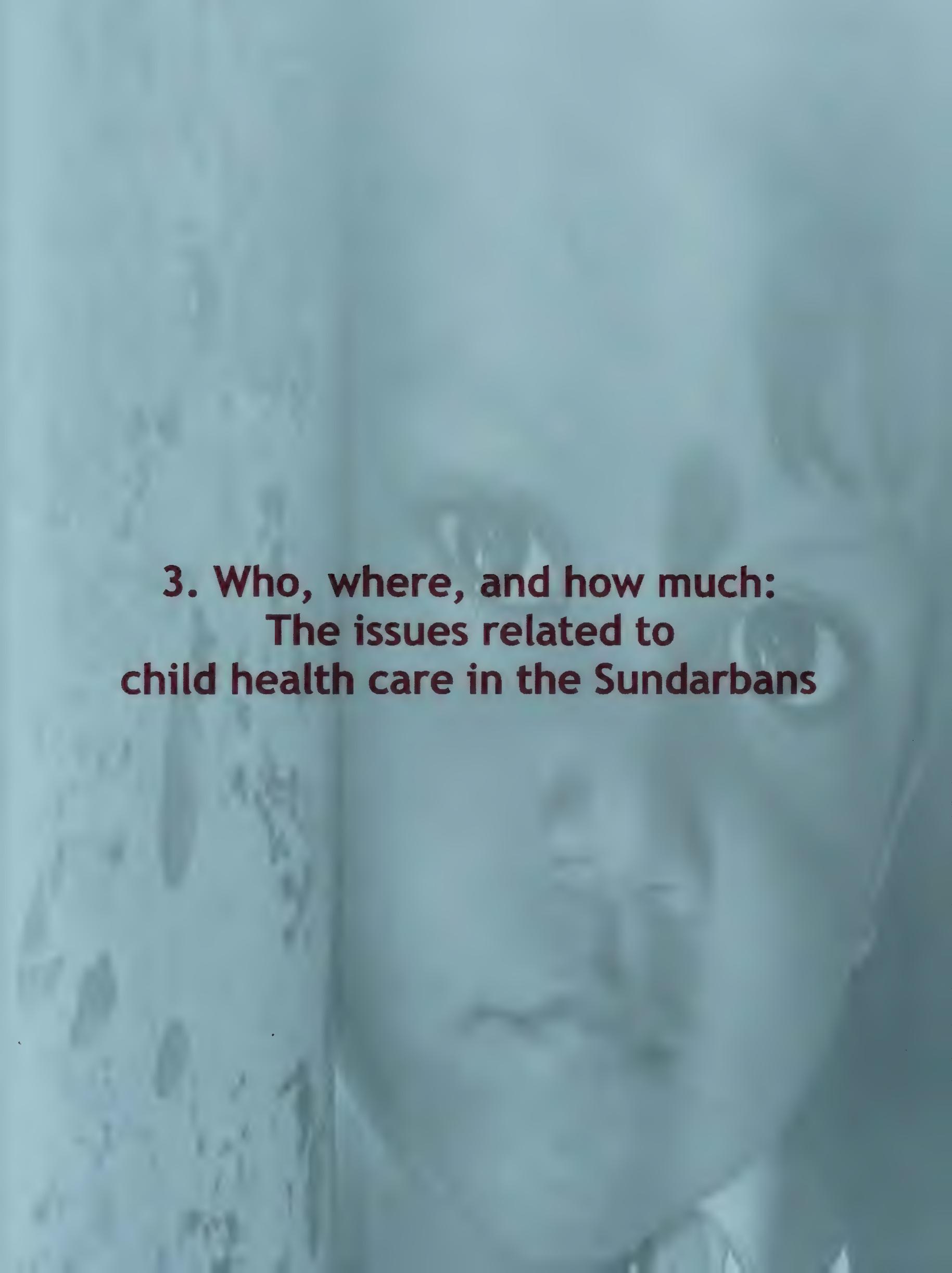
The evidence presented above does not reflect a very impressive role of the state and the society in protecting the basic health rights of the children of the Sundarbans. A typical child of the Sundarbans carries an extra burden of health risks compared to others living beyond the region. Two proximate factors contributing to this high morbidity are easily identified: (1) mothers' low nutritional status and poor health, and (2) chronic child under-nutrition. The vicious cycle of underdevelopment created by a complex combination of poverty, environmental adversities, and cultural barriers trigger the inter-generational transmission of under-nutrition and ill health.

As the 2010 FHS study revealed, there are visible signs of the initiatives undertaken by the state, development agencies, and the civil society to bring development in the Sundarbans. In the context of mother and child

health, the progress is discernible in a few areas, such as antenatal care of mothers and immunization of children. However, it is still too little especially in the context of our focus—the health rights of the children connected to their mothers' health rights. The deprivation starts from their embryonic stage when society fails to address the special nutritional needs of the underweight pregnant women. At the next stage, more than half of the children—three-fourths of the poorer section—take birth at home assisted mostly by untrained hands. A sizable portion among them (about one-fourth) fails to receive minimum neonatal care from the health care system. The child still grows up but with a disproportionately high burden of respiratory and gastro-intestinal ailments. His/ her right to receive medical intervention of assured minimum quality is violated since most of these ailments are treated by village doctors who practise without any formal training in pediatric care. The nutritional right of a large section of the children of 0-2 years is breached first by unbalanced feeding practices—for example, two-thirds of the children are deprived of exclusive breastfeeding in the first five months—and, second by the grossly inadequate response from the nutrition care programmes, such as ICDS programme, which primarily concentrate on feeding the children of 3-6 years at the AWCs. Even this supplementary feeding fails to ensure regular nutritional uptake by a significant portion of the children (about 40%).

People's choice or coping mechanism at a particular time does not necessarily lead to a socially optimal or desirable state. This is especially true in the context of the Sundarbans' children where people often do not have many 'desirable' choices regarding health care. The findings presented in this section highlight four needs to address this situation:

- 1) to recognize that the children's problem in the Sundarbans requires a special attention; the ongoing Mother and Child health (MCH) programmes and the traditional ICDS programme are just not enough;
- 2) to expand the choice set of health care for the children, i.e., to make desirable health care services more easily available and accessible to the remotest islands;
- 3) to strengthen the community's resilience against the climatic barriers and effectively entitle the children of the Sundarbans absorb the benefits of the ongoing development process; and
- 4) to integrate the action against health challenges with the same against broader issues of ecological and livelihood insecurity.



A woman in a red sari is holding a child in a green, outdoor setting. The woman is looking down at the child. The child is wearing a green shirt and a blue and white patterned pants. The background is blurred, showing greenery and possibly a body of water.

3. Who, where, and how much: The issues related to child health care in the Sundarbans

3.1. Introduction: Ranu's story

Last year we had a seasonal flood here. River dykes broke everywhere and we lost our crops. Soon after the flood, there was an outbreak of diarrhea. My wife and I were so busy in rebuilding the cow-shed that had been demolished in the disaster that we could not take good care of our children. Suddenly, one afternoon our youngest daughter Ranu started having loose motions. Within an hour, our four-year-old daughter had been to the loo five times and become very pale and drained. My wife took her to the pink sari didi (ANM) of our village. She gave a tablet and said that the child should be given lots of water with salt and sugar. My wife followed her advice but things hardly improved. After a day, I went to the didi and she referred my daughter to the government health centre (PHC). But the PHC is quite far from our village; we had to cross rivers twice to reach there.



The next morning, I took Ranu to the PHC. I had to walk for an hour and a half to the ferry dock (ghat), carrying the child on my shoulder, as the engine vans were unable to move on the muddy roads. There were very few people at the dock; it was really scary to move on such a flooded river. The boatman charged ten rupees instead of the usual rate of two rupees per person. After reaching the PHC, I found no doctor. The other hospital staff admitted my daughter and started pushing saline. But I was not satisfied with the treatment. They were not doctors!

The next day I brought Ranu back home. My mother then took her to our village Ojha (traditional healer) who gave her a tabeez (amulet) for ten rupees and gave some blessed water to drink. In the afternoon, Ranu started vomiting. I was so scared that I took her to an NGO hospital near our village. A doctor treated her for the night and her condition became a bit stable the next morning. The doctor advised me to leave her at the hospital for five more days. This would cost about Rs. 2000! My brothers advised me to seek a cheaper option for the treatment.

In the evening, I took Ranu to our village RMP. He gave her some coloured tablets and a syrup. He did not charge anything at that time and assured me that he would provide treatment on credit. She was completely cured in three days. I have great faith in the RMP and will never go to any other doctor in future.

—Gobinda Mandal (Male, 30 yrs, name changed), Herambogopalpur village

The story is a running commentary on the usual itinerary of a poor father who helplessly shopped around to obtain an affordable treatment for his ailing daughter. He was experiencing the problems which health researchers typically link to those related to accessing health care.



The accessibility issues may be seen through the lenses of whether adequate health care facilities are available and/or whether one faces geographic, economic, or social barriers to receive the benefits of the existing health care system. Part of the answer remains in the demand side discussed in Section 2, but issues associated with the supply side are equally important to comprehend the matter in its entirety. The following part of this section attempts to focus on a few crucial issues from the supply angle: (1) Is there an adequate public health network to assure basic health care to the children in the Sundarbans? (2) Who are the non-state providers and how do they cover the children's health care needs? (3) How important are geographical barriers in accessing health care facilities? (4) How much attention to the quality of care is given by the providers? And, so on. All these questions would be addressed on the basis of a set of primary and secondary data on the providers and their clients collected through the FHS 2012 survey in Patharpratima block of the Sundarbans.

3.2.1. The public health network is grossly inadequate to maintain child health

Similar to other blocks in the district or the state, the publicly funded health care system in Patharpratima block also delivers preventive and curative services at multiple levels of institutions (or facilities) and through outreach workers such as Auxiliary Nurse and Midwife (ANM), Accredited Social Health Activists (ASHA), and Anganwadi workers (AWW). The public health facilities range from the block level primary health centre (BPHC) to three primary health centres (PHCs) and 65 sub-centres (SC) – arranged in order of their ability to cater to complex health care needs. The BPHC, in addition to playing the role of a referral unit, acts as a hub of all primary health care facilities within the block.



Table 3.1. Gaps in Public Health Care System in Patharpratima block

Sub Centre	Available	Standard / Sanctioned	Gap (%)
1st ANM	65	99	25
AWW	403	403	0
ASHA	204	332	39
PHC	3	11	73
RH/BPHC	1	3	67

Source: Official Data from DoHFW ; Population – 3,31,605 (Estimated)

As Table 3.1 shows, the sub-centres in the block are adequate in number if one goes by the Indian Public Health Standard (5000 population per sub-centre). The number of PHCs, on the other hand, is evidently inadequate by the same standard (30,000 per PHC). The shortage of frontline workers (ANM, AWW, ASHA) is also obvious – about one quarter to one-third of the

required manpower was not available (at the time of the survey).

Availability should not be measured just in terms of physical existence. The more important question is: are these available facilities fully effective especially in delivering child health care? The sub-centres – with at least one female health worker (ANM) but no doctor - are the first contact point for preventive and basic curative health care. Table 3.2 presents a snapshot of the present conditions of the sub-centres based on 30 sample sub-centres surveyed by the FHS team. While the manpower remained satisfactorily adequate – there was at least one ANM at each SC – the infrastructure was evidently deficient. Given that electricity is a scarce commodity in a large part of the Sundarbans, it is natural that most of the SCs run without electricity, implying serious hardship in maintaining the cold chain for vaccines. Most of the medicines for common child diseases were regularly available except Vit-A solution.

Overall, the SCs were apparently not in such a bad shape as one might expect in a geographically challenged area. Yet, they are not 'functioning' at the desired level as far as child health care is concerned. For example, a SC treated 6-7 child diarrhea cases per month, which, based on the estimation from the household survey data, was only about 7-8 per cent of the total estimated cases¹. Similarly, in case of child

¹Assuming that an SC covers a population of 5000, there would be about 600 children of 0-6 years. The prevalence of child diarrhea worked out to 7.8% within a period of two weeks (see Section 2). Hence, total estimated cases in a month would be = $600 \times 7.8\% \times 2 = 94$ (approx). The average number of cases treated by an SC was 74 in a year or 6-7 in a month.

GADAMATHURA P.H.C.

Pathar Protima Block- 24 pgs (S)

WEST BENGAL GOVERNMENT



As in Patharpratima (shown here) most of the Blocks in Sundarbans have low ratio of Government health facilities as per standard requirements.

পাথর প্রতিমা

প্রাথমিকস্বাস্থ্যকেন্দ্র

গুড়বৰত পুর প্রাথমিক স্বাস্থ্যকেন্দ্র

Table 3.2. Conditions of sample Sub-centres, Patharpratima block, 2012

Parameters	% of SCs (N=30)
Infrastructure	
Building in good condition	48%
With electricity	13%
With drinking water	97%
With toilet	57%
Manpower	
First ANM in position	73%
Second ANM in position	93%
ASHA in position	79%
Medicines & supplies	
ORS packets available	97%
Paracetamol available	93%
Cotrimoxazole available	57%
Vit-A solution available	0%
Cold chain	
Cold chain available	3%
Training	
ANM trained in IMNCI	10%
Services provided in a year (average per SC)	
No. of children immunized	97
No. of children with diarrhea treated	74
No. of children with ARI treated	104

beyond their routine work, such as immunization. The typical tendency of the community to prefer a 'doctor' for curative care add to this severe imbalance in the service delivery system.

Three Primary Health Centres (PHCs) shape the second tier of public health care in the block (above the SCs, the first tier). As Table 3.1 has shown, this is just a quarter of what is actually required by the population standard (11). The real shortage is even more in the context of child health care since these facilities often become disabled due to acute shortage of critical inputs. For example, the Indrapur PHC, located in the southernmost deltaic GP of the block, was running without a doctor at the time the survey team visited the facility. It has twelve quarters including two for the doctors; however, all of them lay abandoned. It had a shortage of essential drugs and hardly any equipment for newborn care. Even if they were available, some of them were of no use, as the PHC had no running electric supply. On the other hand, a PHC with minimum but regularly available inputs is likely to address the child health care needs more effectively (Box 3.1).

The BPHC located at Madhabnagar is the apex health care unit in the block, which also acts as the hub of all public health interventions in the block. It caters to a total population of

ARI, only a tiny fraction of the total estimated cases was treated by the SCs. The performance in preventive care, on the other hand, was distinctly satisfactory as the number of children immunized by an average SC was slightly less than the number of children to be immunized². A logical inference one can draw is that the service delivery system in the SCs are heavily tilted towards preventive and maternal health care but help little to meet the basic curative care needs of the children. It is also to be noted that most of the ANMs come from outside their workplace, especially in the deltaic areas, and thus have very little time and energy to attend to anything

Box 3.1. How does the availability of critical inputs in a PHC help?

Gurudaspur (Gadamathura) PHC is one of the bright spots in the public health care delivery system in the Sundarbans. This ten-bedded facility has two doctors and six nurses, without any pharmacist and lab technician. However, on the day of the survey, there was a long queue of patients at the OPD and pharmacy (operated by a nurse). The facility has electric connection, basic instrument for newborn care and 48 per cent of essential drugs. In fact, among the three PHCs of the block, it had the highest number of patients at OPD and IPD in the last one year prior to FHS survey (2011). The on-duty nurse proudly showed an award they received from the Department of Health and Family Welfare for delivering births of the highest number of children at the PHC level across West Bengal. Round the clock availability of doctors with additional work force support has made it a well-functioning health facility.

The effectiveness of this PHC in child health care is evident from the household data, which show that the availability of OPD services had effectively cut into the RMP business. The selected households from the two sample villages which were adjacent to this PHC (Gurudaspur and Paschim Sridharpur) reported less dependence on the RMPs in case of seeking treatment for common child diseases (53% and 63% respectively), compared to the block average (85%). The home delivery rates were also much lower in these villages (28% and 29%, respectively).



²Assuming birth rate 2%, the number of children born in a year = $5000 \times 2\% = 100$.



3,35,000 spread over 17 islands. The above-average performance of this BPHC was reported in the FHS 2010 study³. The trait continues. According to official data, about 72,000 outpatients visited the BPHC for treatment in 2011 – a remarkable performance by the region's standard. It also registered 2350 in-patients with just 30 beds (sanctioned 15), implying a more than 100 per cent bed occupancy rate. The pressure on the existing staff can easily be gauged by the fact that two out of the five sanctioned positions of Medical Officer were lying vacant, accompanied by shortage in some other key positions such as Radiologist, Group-D staff, and the Block Public Health Nurse (BPHN).

How prepared is the facility to deal with children's health care needs? Apparently, it does not have a special focus on children although the children, mostly suffering from common diseases, form a considerable portion of its clients. Coordination of immunization, antenatal care, and institutional birth delivery are given high priority in the official reports, but

the question of how well the children are taken care of after their birth remains unanswered. The basic equipment for neonatal care was available but there was no special plan to reach the children of the deltaic and the climatically-vulnerable islands, who were growing up possibly without any intervention from the public health care net.

The inadequacy in the context of inpatient child health care is also notable. Based on the estimates of the household survey, about 2140 children in the block were hospitalized in one year⁴. This is almost the same as the annual number of admissions of all ages at the BPHC (2350), as given above. The implication is clear: a large proportion of the children who could have been admitted to the BPHC were actually crowded

out by the inpatients of above 6 years. This is consistent with the household data, which revealed that only one-third of the child inpatients were admitted to the BPHC and the rest went out of the block. The possible reasons for such bypassing behaviour are: (1) it is less hazardous for the people living in the northern and eastern part of the block to access the hospitals in adjacent blocks or even in Kolkata; (2) the number of beds earmarked for pediatric cases at the BPHC is very limited; and (3) high perceived severity of the cases coupled with low trust in the local BPHC.

The public health care system has done enough for preventive care but fails conspicuously in curative care. The curative care network does not have a strong focus on child health.

In brief, the public health care system in the block, and predictably in the whole of the Sundarbans, presents a mixed picture regarding the availability of basic child health services. While the outreach services have ensured a good record in preventive health care for children (and pregnant mothers), the amenities for other crucial care are conspicuously short in supply.

³See p-43 of the 2010 report.

⁴The estimated hospitalization rate in the block was 5.4% and children (0-6 years) constitute roughly 12% of population (see Section 1). Hence, estimated number of children (0-6 years) hospitalized = $330,000 \times 12\% \times 5.4\% = 2138$.

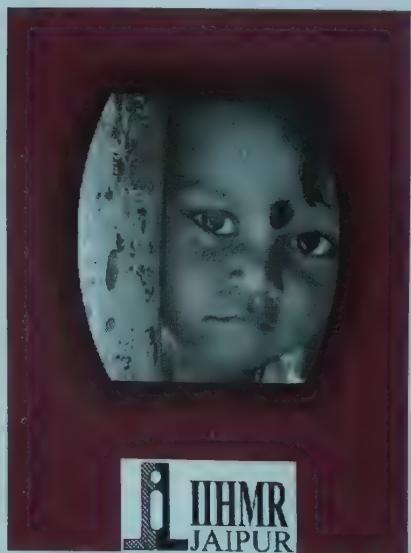
3.2.2. The parallel market dominates and bridges the huge gap in curative care

As presented in Section 2, the outpatient health care market in the

Figure 3.1. GIS Map of Public Health Facilities and RMPs in Patharpratima



Sundarbans is overwhelmingly dominated by the RMPs. The GIS map showing the incisive spread of this parallel market across the islands is presented in Figure 3.1. The public health facilities are shown in the left panel.



The GIS mapping initiative, carried out in collaboration with Riddhi-Uddalak (a local IT agency), was the first attempt in India to map informal health providers, especially the RMPs. The mappers did a census survey and could locate 376 RMPs in the block,

which revealed that, on average a RMP covers about 900 people. One cannot help noting the sharp contrast with the availability of government doctors – one doctor for a population of more than 35000 people! The contrast reflects equally in the number of clients. The aggregate estimate of clients in the block, collected from the RMPs by the mapping team, worked out to around two million in a year, compared to only 0.14 million clients of public facilities. Evidently, the RMPs' share in the outpatient market from the supply side estimation was about 87 per cent, which was very close to the demand side estimate (85%. Section 2, Table 2.6)⁵.

As discussed in Section 2, the dependence on the RMPs does not significantly vary across the deltaic and the non-deltaic regions. However, the concentration of RMPs is much higher in the deltaic areas. From the GIS map it is also evident that the RMPs mushroom over the eastern part of the block, where government facilities are less available. In other words, the informal market is more fragmented in the deltaic areas with a larger number of competitors vying for a limited space.

Who are these RMPs and how do they operate? The informality in the parallel market has its roots in the background characteristics of the providers (RMPs) and their treatment behaviour. Some of the key characteristics, as collated from the FHS survey of 30 RMPs in the most recent times (2012) and the FHS 2010 survey (which covered 185 RMPs in the whole Sundarbans), are as follows:

- On average, an RMP was a 40-year-old male practising modern allopathic medicine. About three-fourths of all RMPs did not have a college degree but more than half (53%) reported to have some sort of 'diploma' or 'certificate' ostensibly from some dubious institutions.

⁵The demand side estimates are, however, only for the child outpatients while the supply side data cover outpatients of all ages.



- A major section of RMPs (60%) had past experience of working with some qualified private practitioners. This experience helps them 'learn' the treatment path and medicines for common diseases and develop some basic skills (such as, pushing injections, checking blood pressure, reading X-ray plates, or even doing minor surgeries).
- The transaction process in this context is worth noting. Almost all the RMPs were available on-call even at midnight although they also operated clinics on a normal routine. All the RMPs would treat a patient on credit. About 40 per cent of them were also providing inpatient care. It is worth mentioning that more than 80 per cent of them did not keep any patient register, making it quite difficult for an external person to track the treatment process.

The intricate market relationship between the parents (especially the mothers) and the RMPs reflected more clearly in the exit interview of 253 parents who sought treatment for their children from the government facilities and the RMP clinics (104 at government facilities and 149 at RMP clinics). The recall bias was much less than that in the household survey since the interview was taken immediately after their interaction with the providers. More than three quarters (78%) of the children were escorted by their mother or by a female family member. The key points, which emerged from this interview, are as follows:

- 1) The average (median) age of the child patients was 24 months. The distribution of the ailments followed more or less the same pattern as found in the household survey; about 59% of the children were suffering either from only fever or from fever with cough and difficulty in breathing. Thirteen per cent reported gastro-intestinal problems (diarrhea and vomiting) and another 13 per cent were ailing from skin problems.
- 2) Proximity and trust were reported as the two most important reasons by most of the RMP clients for visiting the RMP clinics (Table 3.3). The same factors also ranked high among the public clients but by less percentage. Interestingly, proximity was cited by 60 per cent of the BPHC users as one of the top reasons; a plausible inference is that the facility is used (for child health care) mostly by the people who live close by. This is further corroborated by the result that 56 per cent of the BPHC users spent nothing for travel (to the facility), implying that the facility was within walking distance from their homes. The importance of proximity was, however, much greater for RMP clients since about 86 per cent of them paid nothing for travel.
- 3) A large section of the informal providers across the developing world operates primarily as local drug vendors⁶. The RMPs of the Sundarbans are no exception. Usually, they stock all common

Table 3.3. Percentage of users reporting three most important reasons for using the facility, exit interview

	RMP clinic	BPHC	PHC
Number	149	79	25
Proximity	78%	60%	34%
Low Cost	4%	60%	58%
Trust	81%	68%	54%

The total exceeds 100% due to multiple response

⁶Sudhinaraset M, Ingram M, Lofthouse HK, Montagu D. 2013. What is the role of informal healthcare providers in developing countries? A systematic review. PLoS ONE 8(2): e54978. doi:10.1371/journal.pone.0054978.

medicines used for the treatment of most of the ailments. This allows the provider to satisfy his clients who want an 'instant medicine' solution to the problems of their children. For example, most of the RMPs (60%-75%) approached for interview were found to have adequate stocks of the most commonly used medicines, such as Mebendazole (for worm infestations), Gentamicin (used against a wide range of bacterial infections), Metronidazole (for skin problems), Paracetamol (analgesic), Primaquine (anti malarial), Cotrimoxazole (used against a wide range of bacterial infections), and so on. About 50 percent of them had IV fluid stocked in their clinics at the time of interview⁷.

In brief, the operational procedures of RMPs clearly reflect a mutually beneficial agency relationship with their clients in a completely unregulated environment. For example, in case of ailments of their children, rural parents tend to depend on those healthcare providers who would be easily accessible, understand their socioeconomic constraints, respond quickly, and offer a quick medicine at an affordable cost. The benefit of deferred payment (i.e., payment for drugs on credit basis) generates huge incentives to the villagers. On the other hand, the RMPs find significant market incentives in terms of clients who have no or very poor information about their children's health problems or treatment procedures but always look for some packaged medicines or injections whenever the children fall sick. In addition, easy access to knowledge of modern medicines (through medical representatives), better understanding of people's social behaviour and economic constraints, absence of any effective market or non-market control, and as mentioned earlier, a weak public healthcare system make them a formidable player especially in the outpatient market, and also allows their gradual penetration in the inpatient care market.

3.2.3. Quality of care: Unregulated, questionable, and often puzzling

A fair judgment about child health care in the Sundarbans, based on the above analysis, is that an ailing child would not be totally deprived of a clinical intervention, when necessary. But who regulates the quality of this treatment in terms of its potential effect on the child's health outcome, and how? The evidence presented so far unambiguously indicate that there is hardly a quality assurance mechanism even in the case of very basic child health care. Since the first point of contact in case of an ailment is most likely to be a RMP, who is not formally recognized by the health policy makers, the treatment process remains unrecorded, untracked, and unregulated by any external regulator.

The external check on the RMPs is missing but is there any internal or self-regulation? Data from the exit interview reveal a mixed picture. For example, a little more than one-third of the child patients (35%) at

⁷This characteristic (drug vending) was also evident from the exit interview. About 57% of the RMP clients reported that they could obtain 'all' prescribed drugs from the RMP clinic (from where they sought treatment for their children). The corresponding numbers for the BPHC and the PHC users were 24% and 35%, respectively.



There are about 375-400 RMPs working in the block. This means one RMP for 900 people, compared to one doctor for 35,000 in the public health care system.



Rural Medical Practitioners still rule the roost in providing health care to both children and adult.

the selected RMP clinics were given medicines with no physical examination (13-16% in the case of public facilities). Only 42 per cent of the mothers were told what was wrong with their children (75% in public facilities). It was also recorded that 98 per cent of the RMP clients (children) were not advised any diagnostic test. In other words, most of the children were given just symptomatic treatment, a manifestation of 'quick-fix' solution to the ailments.

For a proper investigation into the issues of quality of care, one however needs to have a close observation on the knowledge, attitude, and practice (KAP) of the providers. For this purpose, an extensive KAP study on the RMPs was done during the 2010 FHS study. The present study explored them further through the exit interview of RMP clients and in-depth interviews with selected RMPs. Collation of the data obtained from these exercises reveals a contrast between the knowledge and practice of the RMPs. On the one hand, many of them were found to have up-to-date knowledge about the commonly used modern medicines and their primary purpose; on the other, the diagnosis and consequent practices (or, treatment) often reflected a lack of judgment regarding the rational use of drugs. For example, in response to the question 'What points should you notice in your initial assessment of a child suffering from diarrhea?', 80 per cent of the RMPs indicated 'Loose watery stool and more than three times' but only 47 per cent would assess 'signs of dehydration' and only 23 per cent would want to know about 'duration of diarrhea'. Similarly, in the case of a child arriving with cough and fever or any respiratory problems, only 53 per cent of them would assess the respiratory rate, a procedure essential for diagnosis of influenza. Knowledge on newborn care was strikingly poor. For example, the study tool (for interviewing the selected RMPs) had five questions about how a newborn baby should be cared⁸. Shockingly, 47 per cent of them could not answer a single question correctly; only 10 per cent were able to answer at least three questions correctly.

The deficiency in knowledge of the diagnostic procedures of the RMPs is juxtaposed against a comprehensive and updated knowledge on modern medicines, especially on the latest generation of antibiotics. Despite having knowledge about the importance of ORS in diarrhea treatment, 70 per cent of the RMPs indicated use of IV fluids as the first line treatment of children's diarrhea. Data on the their preferred line of treatment also indicate the unbridled use of antibacterial / antibiotic drugs (e.g., Ciprofloxacin for normal diarrhea, Cefalexin for common respiratory troubles, Cotrimoxazole for common fever, and so on).

Notwithstanding the knowledge gap coupled with unrestrained use of antibiotics and steroids with potential adverse consequences on child health, the RMPs are often the first as well as the last resort of the islanders. What is more interesting that, in many areas, they are perceived as 'better-quality doctors' than the formal providers. The genesis of this acceptability lies in the adaptive capacity of the RMPs to meet the



⁸These are standard questions following WHO guidelines with four options for each question. For example, one question was "What should be done to a baby just after delivery?" The options were— (1) give him/ her mother's breast milk immediately, (2) keep him/ her warm, (3) prevent from the infections especially from the cord wound, and (4) all of above.



it socially acceptable, especially in poor and backward areas. The formal providers (especially the government doctors) lack the second and, hence, often fail to cut into the RMP-share of the market.

3.2.4. Many NGO initiatives but too little for child health

The exclusive socio-economic nature of the Sundarbans, coupled with its ecological importance and climatic vulnerability, has expectedly generated a significant space for the non-state development agencies. Consequently, a large number of such agencies – the NGOs – have flurried over the last few decades across the islands with significant support from various national and international development agencies. Some of these NGOs have earned wide reputation for their outstanding performance and attracted scores of researchers and donors to the Sundarbans.

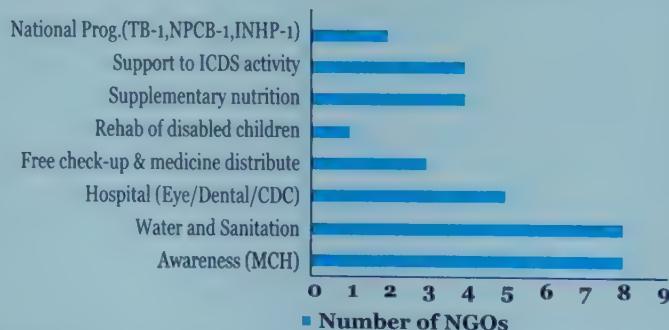
The agencies work on different key agenda, such as livelihood support/ poverty alleviation, improving ecological balance (e.g., mangrove tree planting), primary education, women's empowerment, health care, and so on. It is, however, less common to see an NGO working exclusively on health. The FHS 2012 study could identify 37 NGOs working in various parts of Patharpratima block; only 4 of them were exclusively committed to health care while 16 had health as just one of their many initiatives. As shown in Figure 3.2, most of them focused on water and sanitation, awareness, and some types of hospital services (including community-based birth delivery centres (CDC)).

The health initiatives shown in Figure 3.2 may be classified in two broad groups:

(1) the Public-Private Partnership (PPP) models, which are based on some formal contractual agreement between the state government and a few selected NGOs, and (2) donor-assisted initiatives where an NGO implements a specific project with external (donor's) support. The two important examples in the first

RMPs have good knowledge on modern medicines and their purpose. However, they are quite incompetent in diagnosis and rational use of drugs. They successfully hide their incompetency by making the clinical procedures indistinguishable from that of the formal providers.

Figure 3.2. Distribution of the NGOs working on health (exclusively or otherwise), Patharpratima 2012



category (PPP) are: (a) mobile health clinics (MHC), and (2) community-based delivery centres, known as CDC.

The MHC model involves a partnership between the state's Department of Health and Family Welfare (DoHFW) and a few local NGOs to provide mobile health clinic services to remote islands by using motor launch. Equipped with all basic equipment (including the equipment to conduct some basic pathological tests, portable X-ray machine, refrigerator for vaccine storage, generator set, etc.) and manpower (including a doctor) the launch makes periodical trips to distant islands and operates clinics at local clubs, sub-centres, and the riverside. At times, the clinics also serve as delivery points. Evidently, these clinics offer a high potential model for delivering services to water-locked islands. However, it also exposes severe limitations, especially in the context of child health care. For example, according to an official report, Sabuj Sangha, a local NGO contracted under the MHC scheme, provided mobile services to 3280 people of 12 selected deltaic villages in Patharpratima between September and November, 2012 – or, about 1000 in a month⁹. About 8 per cent of these cases were for RCH care (or 80 per month). This was a negligible part of total estimated cases of child ailments even if we assume that RCH care involved only treatment of children¹⁰. Clearly, with the current rate of service uptake, this high- potential innovative model could hardly offer any solution to the child health problems.

The other PPP model is CDCs, which are targeted to provide institutional birth delivery services to the women from the least accessible areas of the Sundarbans, implemented by local NGOs and supported by the DoHFW. Evidently, the initiative has been able to address, albeit partially, one of the acute RCH care needs of the women who are bound to deliver births at home due to topographic challenges (Boxes 3.2 and 3.4). However, the initiative is relatively ineffective in addressing the other complementary and acute RCH needs, such as neonatal care and curative care for the children, and risks a lower uptake of its services (Box 3.2).

In addition to the PPP models, there are several innovative health and nutrition programmes implemented by the local NGOs with direct financial and technical support from a few international agencies. For example, a project, sponsored by Save the Children (India) and implemented by Sundarban Social Development



Box 3.2. Community Development Centres (CDC): an innovative initiative

There is a CDC at Herambogopalpur GP of the Patharpratima block in its deltaic part, run by Sabuj Sangha since 2008. This CDC mainly caters to the expecting women of three GPs of Herambogopalpur, neighbouring GPs of Lakhsmi Janardanpur and Achintyanagar. A gynaecologist is always available at the centre.

The centre provides 24 × 7 normal delivery services. On an average, there are 35-40 deliveries done here per month. Blood test, delivery, medicine, PNC for 48 hours post-delivery, etc. are given free and all expenditures are reimbursed by the government.

Understanding that delivery services alone cannot attract adequate numbers, the centre runs a pharmacy, and two OPDs – one for child and skin care (2nd and 4th Thursday of every month), and the other for eye and gynaecology (each Tuesday). In the OPD, it treats on an average 30 persons and 40 children per day. Is it enough for the children? Clearly not, as the villagers think. “One cannot wait two weeks to see a doctor if my child has a fever! The OPD should run daily, at least on alternative days, to make it more effective”, said one of them.

⁹Source: <http://wbnrh.org/jangalmahal/index.php?c=userreports&m=districtMHCreport&tab=districtMHCreport> accessed on 16/12/12

¹⁰This is also corroborated by the data from the household survey. Out of 979 ailing children who were treated by any provider, only 2 reported to seek treatment from the mobile clinics.



Centre (SSDC) to reduce Vulnerability to Environment Induced Health Hazards among Women and Children in the Sundarbans, has made its footprint in 19 villages of Patharpratima block through its multi-pronged and innovative approaches. Some of its components are: training of community Task Force Groups on environmental health; providing flood-safe toilets that do not contaminate water to the households; surface water treatment unit to reduce dependence on ground water; training of 5000 school children on water, sanitation and hygiene (WASH) and disaster risk reduction; mangrove harvesting, and so on. The initiatives promise a significant departure from the run-of-the mill approaches to strengthen people's resilience against climatic shocks although its impacts on mother and child health are yet to be measured.

There are a few other instances of innovations spearheaded primarily by the local civil society organizations.

There are very few instances of innovative child-focused health initiatives led by the NGO sector. The impacts are remarkable but limited only to some small pockets.

Given the alarming rate of child under-nutrition in the Sundarbans, it is quite rational that the initiatives were designed to provide

special nutritional care to the children. The Special Nutrition Unit (SNU) set up by SSDC with support from Terres des homes is such an example (Box 3.3). The unit has been able to demonstrate remarkable results in improving the nutritional status of severely malnourished children¹¹. However, with its limited resources it could probably address only the tip of the iceberg – out of about 4600 (estimated) severely undernourished children in the block, it could serve only 184 (4%) within a year. Clearly, it needs a huge scaling-up operation to address the whole.

In brief, the scale of the NGO initiatives in child health care is far from desirable. Except for a few nutrition care initiatives, child health care is not really focused. There are a few Reproductive and Child Health (RCH) initiatives covering a small percentage of the population; but even there some crucial child health



Box 3.3. Special Nutrition Unit (SNU)

The SNU is a unique centre, set up by SSDC with supports from Terres des homes, to address the alarming problem of child under-nutrition in the Sundarbans. The unit provides intensive nutritional care to severely malnourished children. Its intervention includes treatment of child infections, a special feeding procedure, and reloading minerals and vitamins into the ailing child. Mothers of the affected children are also sensitized and trained on proper child feeding, care, and hygiene. The children, who are admitted to the centre, usually return to good health and improved nutritional status in 14-21 days when they are discharged. The community mobilizing team, in close coordination with the local ICDS system, keeps a close follow up on the children and assists the mother to continue the good nutritional and hygiene practices.

The unit was set up in July 2011 and till October 2012 it treated 184 children. A sub-set of the data on the admitted children reveals an impressive outcome. About 54% of the children were severely malnourished (z score $<3SD$) at the time of admission. The rate in the same cohort dropped to 19% when they were discharged. The average percentage of children with red MUAC (5.5-11.5 cm) dropped from 70% to 15%. The outstanding outcome was achieved within an average stay of 15 days at the centre.

The numbers, however, do not really reflect the uphill tasks the workers face to make the parents bring their extremely undernourished children to the centre. There are tough social and economic barriers. For many mothers, it is difficult to leave other children at home and stay with the admitted one at the centre for two weeks. Some fathers rank the transportation cost (to the centre) and the mothers' absence higher than the cost of having a malnourished child untreated. After all, it is not a disease!

The data also present a curious picture of gender imbalance. Among the children treated at the centre, 69% were female. Does it imply that girl children are more vulnerable to severe under-nutrition? Or, is it a self-selection bias, i.e., the parents get concerned about their daughters only when they reach a serious condition?

¹¹According to the Census, children (0-6 years) constitute about 12% of the population. Hence, total child population in the block is $330,000 \times 12\% = 39,600$. According to FHS household survey 11.7% of the sample children were severely undernourished. Hence, the estimated number of severely malnourished children in the block = $39,600 \times 11.7\% = 4633$.



Access is still a major cause for concern for the islanders



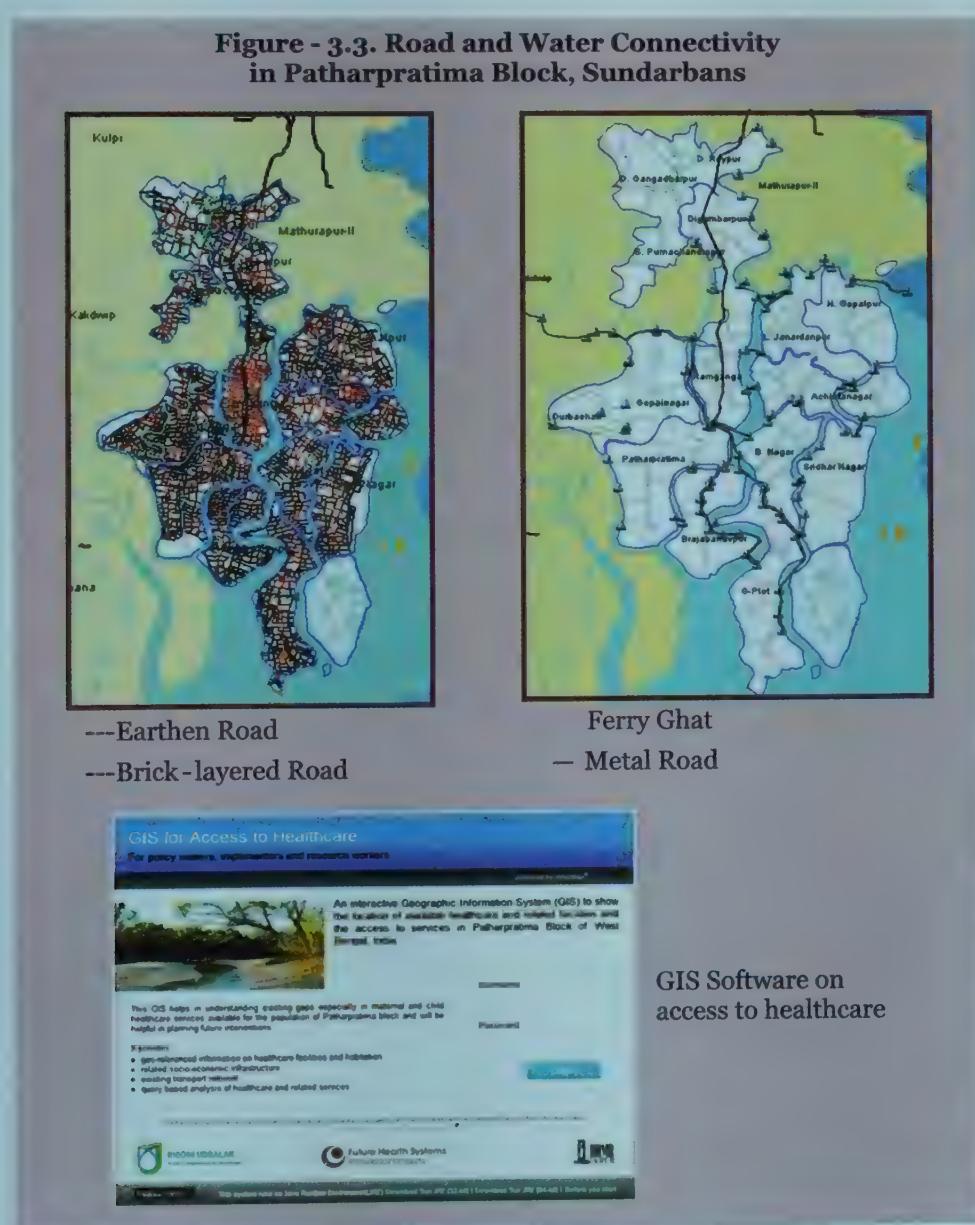
issues (especially the nutritional and curative care needs for children of 0-6 years) remain out of focus and are easily dwarfed by other components such as antenatal, intra-natal, and immunization services.

3.2.5. Unique geographical challenges compound the barriers to access health facilities

It is known that the absence of good roads and lack of proper communication, particularly in the poor, remote and adverse terrain, constrain access to health care, resulting in poor health outcomes of the people. Geographical inaccessibility is very common not only in the Sundarbans but in many other parts of the state of West Bengal, such as the tribal districts in the western part (Bankura / Purulia) or the hilly areas of North Bengal. What, then, makes the Sundarbans different?



Figure - 3.3. Road and Water Connectivity in Patharpratima Block, Sundarbans



The difference, as Figure 3.3 shows, lies in its deltaic topography. The deltaic part is river-locked while the non-deltaic part is connected with the mainland. Consequently, a person living in the deltaic part has to switch from one mode of transportation to another – walking, engine van, boat, and bus – in quick succession, if he/she has to reach Kolkata, the state capital, on the same day. In other words, the islanders are trapped by the geographical adversities, which are embedded within the economic and social barriers and are often difficult to assess from quantitative data. The results show that a woman, who delivered birth at home, would have to travel 10 km on average had she decided to deliver birth at the nearest public hospital. However, the physical distance in the Sundarbans often fails to reflect the degree of inaccessibility as travelling a short distance in some pockets may mean quite a hardship due to broken transportation linkages or unavailable water transportation when it is most required. The hardship is

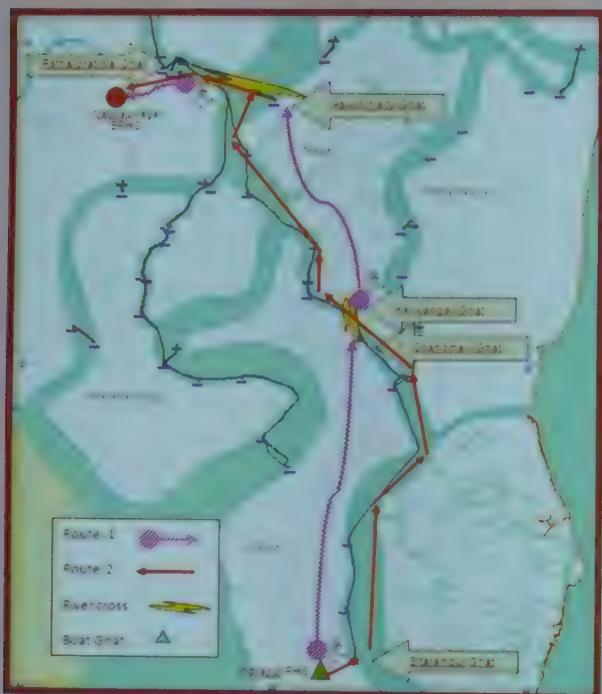
compounded during low tides when the boats are stuck in the mud flats and/or during monsoon months.



Clearly, time, physical stress, and money required to negotiate the geographical challenges play important roles in people's choice of health care. For example, a parent living in Indrapur village, located in the southernmost part of the block, would be required to travel 20-28 km that would take 2.5-3 hours if he / she had to seek treatment for his/her child from a functional government health facility (Box 3.4). The cost of transportation multiplies several times and becomes prohibitively high if the journey takes place at night when no regular ferry is available. Clearly, a more viable and logical alternative, in this case, would be to knock at the door of a local RMP who is always ready with some quick-fix medicines.

The deltaic topography makes it extremely difficult for the people to access health facilities. People living in the remote islands have to depend on multi-modal transportation. The costs in terms of time and transportation are often prohibitively high.

Box 3.4. Virtual Journey: How People of Indrapur Village Access Public Healthcare Facility

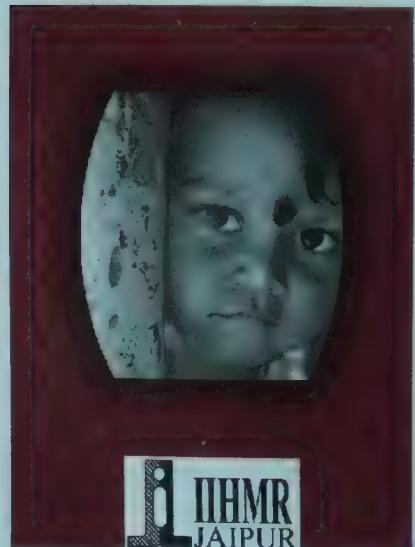


Indrapur village is located at the southernmost part of the Patharpratima block. Within the village, motor van is the only mode of transportation; otherwise people have to walk. Ailing people go either to the village RMP or to the BPHC. There is a PHC in the village, but it is almost non-functional (no doctor). While one can reach the village PHC within 20-25 minutes, one has to travel 20-28 km to reach the BPHC, the next tier of government facility. The map on the left shows the two alternative routes the islanders usually follow. During day time there are van or ferry services available at certain frequencies. The route with less journey breaks (Route 2) to reach the BPHC would require a person to walk or travel by van rickshaw a distance of 2 km, cross a river (16 km), and then again ride a van rickshaw to cross a distance of 2 km. The whole journey would cost Rs. 26 per person. Route 1, with more journey breaks, takes about the same time but with higher cost. However, the situation reverses during night when there is no option but to hire private transport. At night, it may cost Rs 1200-1500 in route-1, and it is more than double for route-2 because this route is mainly along the rivers and hence costs more but takes less time.

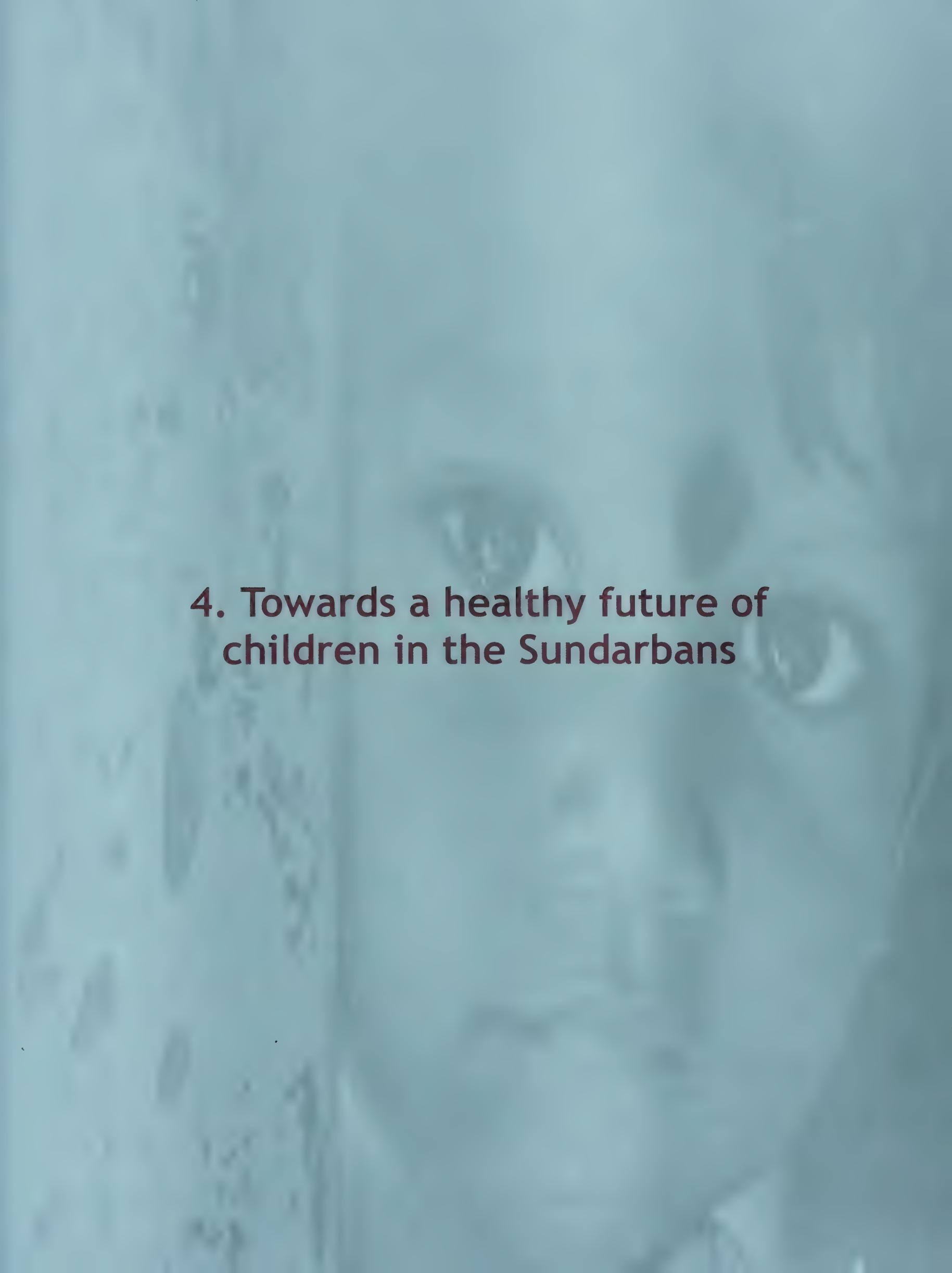
From	To	Time (Min)	Mode	Distance (km)	Day Fare (Rs)	Night Fare (Rs)
Route-1						
Indrapur PHC	Chandmari Ghat	70-90	Motor Van	10-12	20	450-500
Chandmari Ghat	Kalibangal Ghat	7-10	Boat	1	2	100-150
Kalibangal Ghat	Aswini Maity Ghat	30-40	Motor Van	7-10	15	250-350
Aswini Maity Ghat	Patharpratima Ghat	20-25	Boat	2-3	2	300-350
Pathatpratima Ghat	Patharpratima BPHC	15-20	Van	2	7	100-150
Route-2						
Indrapur PHC	Sitarampur Ghat	10-15	Motor Van	1.5-2.5	7	100-200
Sitarampur Ghat	Patharpratima Ghat	90-150	Boat	16-17	12	2200-3000
Patharpratima Ghat	Patharpratima BPHC	15-20	Van	2-2.5	7	100-150

3.3. Conclusion

The analysis presented above may be used to understand the gaps and the key problems associated with the present delivery system in the context of child health care in the Sundarbans. The knowledge may be generalized to other parts of the Sundarbans since the data used for this analysis were collected from one representative block (Patharpratima). The key conclusions on the supply side of the system are highlighted below:



- The public health care system offers a range of services to the children. The efforts in generating more demand for antenatal care, institutional birth delivery and protecting the children from vaccine-preventable diseases – three health rights of children (see Section 2) – have quite visible results. On the contrary, the public system is neither adequately capable nor even focused on other important rights, viz., nutritional and curative care to the children of 0-6 years.
- Because of government failure in the outpatient care market, a parallel market of RMPs has emerged, which now overwhelmingly dominates the market. The quality of this medical care is highly questionable and raises serious concern about the future health impacts on the children. On the other hand, the easy availability of such a huge informal workforce, who are already firmly embedded in the health care system, calls for urgent policy level explorations of how to regulate and internalize this parallel market. The next section attempts to provide some suggestive clues in this direction.
- The third sector, i.e., the NGOs and other development agencies, is yet to come up with a visible child-focused health care movement. There are scattered examples of a few child-focused initiatives with varying degrees of innovation; it is important to assess their effectiveness and scalability, and invest in high-potential interventions. It is also important to encourage the local state agencies (for example, the Block health office) and voluntary organizations to propose innovative child-centered interventions (see the next section for details) and mobilize funds from the centrally-sponsored programmes (e.g., NRHM) to implement them. The role of DoHFW and the donor agencies is highly relevant to jumpstart the process. Finally, it is too idealistic to expect that any one type of provider – government, RMPs, or NGOs – would be able to fill the enormous gap in child health care on its own. Each has its own strengths and weaknesses. The public sector is efficient in planning, setting standards and monitoring but fails to deliver services due to perennial shortage of human resources and other critical inputs. The informal providers, on the other hand, are strong in manpower but not officially entitled to deliver services and are technically incompetent to assure minimum quality. The NGOs are committed to address the community's key problems but are not enabled to scale up their initiatives. The solution, therefore, lies in a set of innovative but feasible designs where all these groups can combine their strengths in a well orchestrated manner to deliver a comprehensive basic health care package to the children of the Sundarbans. The next section proposes a broad outline of such designs.



4. Towards a healthy future of children in the Sundarbans

4.1. Key challenges

Geographic location, climatic hazards, and very limited economic opportunities have together given the Sundarbans a special place on the regional map. The fundamental challenge, in the context of health care, is how to provide the people living in the vulnerable blocks with a comprehensive, low-cost, and accessible platform for health care. The challenge takes a formidable shape in case of child health care, especially because society and the state have failed to protect a few critical child health rights (See Section 2.3) and the efforts at correcting this system imbalance have been inadequate. The critical areas, especially where this failure has imprinted distinctive marks, are (1) nutritional care, (2) treatment of common diseases, and (3) neonatal care to a significant section of the child population. Quite understandably, lying underneath the manifest non-compliance of child health rights are sordid stories of their mothers who, despite remarkable advances in maternal health care in the state, remain conspicuously under-served.



The key challenges to make the system more responsive to children's basic health are generated by several factors working within the following five domains:

Environment: The climatic hazards and associated health shocks (temporary and long run) that affect child health disproportionately

Topography: The inhospitable terrain, especially in the islands located near the reserve forest and / or the Bay of Bengal, that makes it extremely difficult to access health facilities in need

Society: The prevalent cultural norms and practices that often pose strong barriers to access appropriate health services

Livelihood: Inadequate economic opportunities coupled with livelihood uncertainties (due to climate shocks) that strongly constrain the chronically poor parents in seeking proper health and nutrition care for their children

Health care structure: A fragile public health care system failing to reach a large number of children and the private sector occupying the space with highly questionable quality

It is important to note that the challenges across the domains are not independent; rather, they work together and produce a strong spiraling effect to resist the development process, especially in the context of health sector initiatives. The special features of the Sundarbans have been duly acknowledged by the Government of West Bengal and a separate ministry on the Sundarbans has been established for this purpose. New development initiatives are being taken up to protect the region from misery brought about by natural adversities and consequent poverty. The time has now come to acknowledge the uniqueness of the health care needs of this region and focus on them with special attention. The next sections outline a few broad strategic options for improvement in service delivery, not an implementation of a specific



intervention. A logical step forward would be to discuss and debate the options with all key stakeholders and finalize a road map with necessary modifications. A detailed implementation plan is the necessary next step which should be drawn up in consultation with the agencies (including government agencies) working at the ground level.

The suggested solutions are guided by the proposition that, given their complex landscape and barriers, the Sundarbans require a multi-pronged strategy to meet the health care need of children. A single intervention (such as mobile health clinics), even on a large scale, is less likely to bring about the desired changes in health outcome if other things (for example, public health service delivery) remain the same. In other words, it requires a series of initiatives engaging all types of service providers and innovatively putting pieces of interventions together to create a big push and reach a sustainable and high level of delivery system.

4.2. Need for a child-focused lens in the existing public health programmes

The current strategy of tagging child health with the general reproductive health care is a well-tested one. However, in the present context, the 'child' issues are often diluted due to extra emphasis on birth delivery care (pre and intra-natal care of mothers). This is especially true for the general services that are provided to people of all ages (for example, outpatient care in the block health facility), where the lack of focus manifests itself in different ways, such as inadequacy of pediatric beds, absence of child-related critical equipment at the PHCs, untrained (in critical child care) staff, and so on. The deficiency in supply structure, as this report has already highlighted, is particularly visible in neonatal care for home-born babies. Similarly, for nutritional services, a large number of the children of the critical age group (0-2 years) remain virtually unreached by the ICDS service centres. As presented in this report, the focus on child health is equally, if not more, attenuated in the services provided by voluntary agencies and other private providers.



This report strongly recommends a strategic shift in the provision of RCH care, especially in the context of the Sundarbans. The shift would require an assured continuum of quality health services to every child and his/her mother at least during the thousand days window. In other words, the supply side needs to be reoriented towards a child-focused environment, which would ensure protection of the six primary rights as mentioned in Section 2.3. This, however, is a long run process. The immediate steps to achieve this goal are:

- Implement or reinforce well-tested, low-cost, and integrated child health programme, such as Integrated Management of Neonatal and Childhood Illness (IMNCI) in the less accessible islands in collaboration with the local voluntary agencies or women's groups. This would require intensive home visits by community health workers targeted at newborns at least three times within the first 10 days. Workers will promote exclusive breastfeeding, early recognition of illness, and management of complications.
- Establish a GIS-based surveillance system to identify the severely malnourished children in each block. The system will efficiently locate the children, alert the health workers for appropriate intervention, and monitor the progress of the child.
- The Block PHC should be made an effective referral unit for management of complicated child illness and special nutritional care. A core team of childcare unit with at least one doctor and a few paramedics – all trained in management of neonatal care and childhood illness – should be formed to operate within a well-defined domain of pediatric care.
- The convergence of health and nutrition at the frontline is extremely important to break the vicious cycle of malnutrition and morbidity. Several models have been designed in the state for this purpose – for example, monthly meetings of health workers (ANM and ASHA) and



nutrition workers (AWW), organizing village health and nutrition day (VHND), and so on. Unfortunately, in many areas, the aggressiveness of these initiatives at the initial stages tempered down in course of time. The process needs to be sustained and other departments and agencies need to be regrouped to meet the common goal of the convergence strategy.

Media has a crucial role to play in shaping future health system.

4.3. Building effective partnership with private sector and development agencies

One of the most crucial lessons from the FHS research is that neither the government nor the private (for or not for profit) agencies can achieve the desired child health goals alone. The government failure is particularly visible in curative care while the market fails to provide preventive and nutritional services. The solution thus remains in innovative partnership models that will work for the achievement of maternal and child health-related goals by strengthening and coordinating action at all levels; promoting rapid scale-up of proven, cost-effective interventions; and advocating for increased resources.



The two most critical non-state players in the context of the Sundarbans are RMPs and NGOs. The issue of building partnership with the RMPs is highly sensitive but extremely crucial since, as this report revealed, they are virtually omnipresent in the provision of ambulatory care to children. A rational approach would therefore be to design and test such interventions that would allow the public sector to build partnership with these providers and engage them in the local maternal and child health programmes. The option allows the system to use a vast pool of resources (i.e., RMPs), which is being used by the people anyway. However, the risk, as mentioned earlier, remains in their huge potential to generate adverse health effects through immature applications of medical science. The additional barriers are (1) the legal aspects, which may bar involving an RMP in formal medical care, and (2) the intrinsic profit motive of RMPs, which may not align to the public health goals of the government.

Several experiments at the international and national levels have demonstrated that minimizing the risk and overcoming the barriers is possible through building effective partnership between the informal and the formal actors of health system. This study strongly suggests the initiation of such strategic interventions, framed as some sort of franchise models, at least in the vulnerable blocks of the Sundarbans with initial focus on child health care. The basic components of such an intervention might be:

- Empanelment of selected RMPs at each block as “Child health gate keepers”. Empanelment should be based on several essential quality indicators. The programme may be initially started where the public system is relatively weak. The role of an empanelled RMP will be to provide a set of basic curative services and refer cases immediately to formal providers as and when the patient crosses the identified “safe treatment” mark.
- Identify a set of basic curative and preventive services for which the RMPs will be given franchise right to operate as official gatekeepers.
- Involve civil societies (Panchayat or NGO) in implementing empanelment and mentoring of the RMPs.
- Provide intensive training to selected RMPs on simple treatments, identifying potentially complicated cases and “danger mark” where they have to refer.



It is also important to devise an incentive structure (monetary and otherwise) for adopting franchise right and adhering to standard protocols.

Strengthening the partnership with the local voluntary agencies is extremely vital for getting even with the health challenges in the Sundarbans. As shown in Section 3, the service delivery space occupied by the local NGOs is too limited to address the health care needs of children. It is important to build an enabling environment for these agencies through capacity development and targeted financial support so that they venture in designing and implementing innovative models to address the geographical barriers faced by mothers and children on the way to accessing appropriate care. Encouragingly, the ongoing NRHM programme offers good scope of funding innovative mother and child health intervention programmes in the specially disadvantaged areas. The enormous burden of child malnutrition and associated diseases offer

windows of opportunities for the local NGOs to design innovative child health projects and seek supporting funds from the NRHM platform.



Platform of diverse stakeholders can help influence health policy

4.4. Stimulating local innovations

The problems related to health care in the Sundarbans are unique; so should be the solutions. This requires the nurturing of integrated and participatory processes that often fall outside the boundaries of the health sector. For example, due to frequent climate shock and food insecurity in the Sundarbans, the treatment of acute malnutrition should be integrated, for an effective child health intervention, to a livelihoods development programme and a programme that aims to prevent and mitigate the impact of emergencies.

The present report does not intend to specify natures and dimensions of the service delivery interventions targeted to child survival. However, based on the FHS research, it is expected that the interventions will have either one or a combination of the following key elements:

- Social engineering to integrate public health care service provision, voluntary agencies, and the unqualified providers at the village level
- Innovative mechanisms that bridge several broken linkages in the referral system in healthcare service uptake with participation from the local community organizations
- Innovative use of low-cost and appropriate Information Communication Technology (ICT) such as GIS and tele-communications as a solution to many of the issues linked with effective service delivery as per the health need of the population
- Community case management of common childhood diseases, such as, malaria, diarrhea and pneumonia
- Targeted community-based intervention for severely malnourished children.

Section 4.6 elaborates the FHS strategy to stimulate this innovation process.



A local level meeting in place in with Cyclone Aila affected women



4.5. Generating scientific evidence and making the system act on them

The FHS research on the Sundarbans has established that the challenges in the Sundarbans can no longer be considered simply as an environmental or a developmental issue. People's health is a great concern that must be put at the heart of the development or the emergency-mitigating agenda. The health risks are particularly high for children, who already suffer from high burden of climate-sensitive diseases and lack effective public health systems to protect their basic health rights. The primary step to bring the agenda of child health to the fore is to generate and feed the policies with scientific evidence on the crucial child health issues for necessary action.

The evidence presented in this report depict a macro picture of the present status of child health in the Sundarbans. However, it leaves many questions unanswered, especially those which would require in-depth research on several diverse contexts and specially disadvantaged groups. For example, for a comprehensive knowledge on maternal and child health issues in the region, it is important to understand the status of their health rights in the context of:

- The households who have become climate refugees due to Aila or any other climatic shocks
- The women and children who are engaged in catching prawn seeds from the river
- People who depend on forests for their livelihood
- The households whose male adult members have migrated out of the Sundarbans to earn a livelihood
- The villages or islands, which are more prone to tropical diseases such as Kala-azar or Malaria
- The children who are severely malnourished

These are a few examples of the research issues that remained unaddressed so far. It is expected that future research will explore the status of the health rights of children and their mothers in these contexts and inform the local policy actors with hard evidence. On the other hand, the key supply side issues, which call for more knowledge, are:

- Access to and the supply chain of medicines to the users of RMP services
- The quality of services provided by the formal and informal providers, especially in the context of maternal and child health care
- Community's capabilities to manage common child diseases and malnutrition

4.6. Future steps of FHS

This Health Watch report is the first step in the direction of the FHS project's initiative to implement a knowledge-to-action intervention in the context of child health care in the Sundarbans. The next logical step would be to use the evidence as an instrument to inform and influence all key stakeholders to design and implement strategies to improve compliance of child health rights. Specifically, the FHS project will undertake the following concurrent steps in the next one year (April 2013 – March 2014):



Build a knowledge platform to generate new ideas: A workshop will be organized to generate new ideas to improve the health and nutrition services to children of the Sundarbans. All key government and non-government agencies working in or for the Sundarbans, external development partners including donors, and interested academicians will be invited to this ideation workshop. The key findings of the FHS research will be communicated to the participants and a brainstorming session will be conducted to cull out new ideas. Based on several parameters, such as feasibility, sustainability, scalability, etc., a shortlist of the innovative ideas (and corresponding agencies who are interested to implement the respective ideas) will be prepared after the workshop. The integration of the Fourth estate (media) into the platform is also planned to help in knowledge dissemination and to change perceptions of both the direct and indirect actors. A local level platform would also be floated to harness the experiences and expertise of the ground level actors and the end users.

Capacity development of selected agencies: In the next step, a three-day training workshop will be conducted with the shortlisted implementation agencies (see above). The workshop, conducted by trained resource persons, will help the agencies to prepare grant proposals on the selected innovation with an aim to seek funds from the funding agencies (government and non-government). The proposals, when finalized, will be submitted to appropriate and interested development partners. Orientation workshops, particularly with the local media, is also in the offing to help develop their capacity for generating flow of information and to act as watchdogs for the optimum performance of the health system.

Concurrent research: The FHS research team will concurrently generate new evidence on the special needs / issues, which have remained unexplored (or partially explored) so far. A comprehensive list of such topics will be prepared (see Section 4.5 for some examples of such topics) in consultation with the key stakeholders and a case-study will be prepared on each of them. These case studies will be communicated separately through the subsequent Health Watch Reports and comprehensively through a book, to be published by FHS India at the end of 2014.

List of FHS India Publications

● **Journal Publication:**

Mukherjee M, B. Kanjilal, D. Barman. P. Guha Mazumdar. 2011. Child Health in the Sundarbans: How far mutually reinforcing shocks act as contextual determinants?, *Journal of Health Management*, 14(2): pp-117–140

Mazumdar S and U-G Gerdtham. 2011 Heterogeneity in Self-Assessed Health Status Among the Elderly in India, *Asia- Pacific Journal of Public Health*, doi:10.1177/1010539511416109

Susan A. Tuddenham, M. Hafizur Rahman, S Singh, D Barman, B Kanjilal. 2010. Care Seeking For Postpartum Morbidities In Murshidabad, Rural India, *International Journal Of Gynecology Obstetrics*

Kanjilal B, Papiya Mazumdar, Moumita Mukherjee, M Hafizur Rahman. 2010. Nutritional status of children in India: household socio-economic condition as the contextual determinant. *International Journal for Equity in Health*, 9:19

● **Book Publication:**

Bloom G., B. Kanjilal, H. Lucas, D. H. Peters (Eds.). 2013. *Transforming Health Markets in Asia and Africa*. Routledge Publication

Kanjilal B., S. Mazumdar. 2013. Transition in the Indian Healthcare Market, *Transforming Health Markets in Asia and Africa.2013. Edited by G. Bloom et al.*, Routledge Publication

Kanjilal B, P. Guha Mazumdar, N. Patra. 2012. Healthcare in a climatically challenged area: Case study of the Indian Sundarbans, *Challenges of Livelihood and Inclusive Rural Development in the Era of Globalization*. Eds. P. K. Chattopadhyay and S. Bhattacharya. New Delhi, ISBN: 978-93-81274-25-5

Ghosh U. 2012. Determinants of parent's choice: Reflections through Ethnographic lens, *Challenges of Livelihood and Inclusive Rural Development in the Era of Globalization*. Eds. P. K. Chattopadhyay and S. Bhattacharya. New Delhi, ISBN: 978-93-81274-25-5

Barman D, N Patra and P Sengupta.2012. Addressing four 'A's of accessibility in child healthcare: A case study of Indian Sundarbans, *Challenges of Livelihood and Inclusive Rural Development in the Era of Globalization*. Eds. P. K. Chattopadhyay and S. Bhattacharya. New Delhi: New Delhi, ISBN: 978-93-81274-25-5

Patra N. 2012. An Analysis of Socioeconomic and Demographic Determinants of Childhood Immunisation in India, *Gender Issues and Empowerment of Women*. Eds: Manoranjan Pal et al. Ch-11. pp-205-26. New York: Nova Science Publishers

● **Report Publication**

Kanjilal B., M. Mukherjee, S Mondal, A. Mandal and D. Barman. 2007. Health, Equity And Poverty Exploring The Links In West Bengal, India

Kanjilal b., P. Guha Mazumdar, S. Mondal, D. Barman, M. Mukherjee, S Singh, A Mandal. 2010. Health Care in the Sundarbans (India) Challenges and Plan for A Better Future

● **Working Paper Publication**

Mazumdar. G. P., D. Barman, A. Mandal, B. Kanjilal. 2010. Revisiting The Role Of Geographical Accessibility In Women's Access To Healthcare

Barman D, P. G. Mazumdar.2009.Demand And Supply Side Barriers In Access To Childhood Immunization Services - A Case Study Of Murshidabad, West Bengal

Mukherjee. M., P. G. Mazumdar, B. Kanjilal.2009. Health Shock Vulnerabilities And Its Correlates Exploring The Linkages For In-Patient Care Seekers In West Bengal

● **Research Brief Publication**

Mondal S.,B. Kanjilal, S. Singh, D. Barman, M. Mukherjee and A. Mandal.2008.Catastrophic Health Care Payment: How Much Protected Are The Users Of Public Hospitals?

Barman D.,B. Kanjilal, S. Singh, S. Mondal, M. Mukherjee and A. Mandal. 2008. Barriers To Access Immunization Services: A Study In Murshidabad, West Bengal

Mondal S.,B. Kanjilal, S. Singh, T. Samanta, A. Mandal. 2007. A Parallel Health Care Market: Rural Medical Practitioners in West Bengal, India

● **FHS Event**

Seminar on Improving Health Care Delivery for the Underserved: Issues and Prospect organized by Future Health Systems-Institute of Health Management Research on 20 June 2011.

Global Symposium on Healthcare in Sundarbans: Challenges and Options for a Better Future jointly organized by Future Health Systems-Institute of Health Management Research and Liver Foundation West Bengal on 6 January 2010.

Contact Information

For Global FHS Activities:

Daniela Lewy, Research Associate
Bloomberg School of Public Health
Johns Hopkins University
615 N, Wolfe Street
Baltimore, MD 21205, USA
Email: fhss@jhsph.edu
Tel: +1 410 502 3886
Fax: +1 410 614 1419
<http://www.futurehealthsystems.org>

For FHS India:

Barun Kanjilal (barun@iihmr.org)

Head Office:

IIHMR, 1 Prabhu Dayal Marg, Sanganer Airport,
Jaipur-302 029, India
Phone: +91 141 3924700, 2791431-32
Fax: +91 141 3924738
Email: iihmr@iihmr.org
<http://www.iihmr.org>

Project Office:

IIHMR, Plot No. 22 & 23, Nazirabad, P.O.- Ucchepota
(besides Heritage Group of Institutes),
P.S.- Sonarpur, Kolkata-700 150, India
Phone: +91 33 6415 8788